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NOT many years have elapsed since the subject of fractures was brought before this Association by a former president, Sir William Wheeler, in an interesting and able historical survey. Nevertheless, I have chosen it without hesitation for my address, and I feel that in doing so no apology is necessary. The study of fractures is a fascinating one, beset with difficulties and problems yet unsolved, and in recent times there is no subject which has occupied the attention of surgeons to a greater extent than that of fractures and their treatment.

TREATMENT OF FRACTURES BEFORE AND DURING THE WAR.

For some years prior to the outbreak of the Great War the problems of the treatment of simple fractures had become of supreme interest. Operative measures, rendered possible by the advancements of modern surgery, had been introduced and were claiming an increasing number of adherents. In the British Isles this position was due chiefly to the work of Sir Arbuthnot Lane, whose faultless technique and brilliant results had attracted world-wide attention. The relative merits of conservative and operative treatment were so keenly debated, and the question had reached such importance, that in 1910, following a discussion at the annual meeting of the British Medical Association, a committee was appointed by the Council of the Association "To report on the ultimate results obtained in the treatment of simple fractures with or without operation." In 1912 its report was published,[1] based on investigations of over 2900 cases of fractures of the long bones. This report merits close study; but it must suffice here to say that its conclusions, while carefully guarded, were, on the whole, favourable to operative treatment. It demonstrated clearly the close relationship between good anatomical and good functional results, and also showed that in a considerable proportion of cases both open and closed methods of treatment left much to be desired.

In America, and on the Continent also, the subject was exciting great interest, and the operative treatment of simple fractures formed one of the topics for discussion at the French Surgical Congress in 1911. Although no agreement was reached, there is no doubt that operative measures, especially those advocated by Lane, were widely practised at this period.

With the outbreak of war in 1914, when surgeons were faced with the task of dealing with overwhelming numbers of grossly infected compound fractures, fresh problems arose. It was recognised that direct fixation by operative means was not only inadvisable but dangerous in such cases; operations on the fracture were confined to those dealing with infection, and the attention of surgeons was turned once more to indirect methods of control. The great value of extension and the Thomas's splint—so long insisted on by Sir Robert Jones—became apparent; non-operative treatment was enormously improved, and excellent results were obtained in many cases which, in the early stages of the war, would have proved hopeless. Consequently, operative treatment for the fixation of fractures has largely fallen into disuse and is, I think, not employed as frequently as it should be at the present time.

In spite of all progress, it is natural that many unsatisfactory results should have followed the serious fractures of warfare. Vicious union and non-union have been common sequelæ and constitute problems with which orthopædic surgeons have been much concerned, and in which operative measures are clearly indicated in many cases. In bringing my subject before you to-night no comprehensive review is possible, and I shall confine my remarks to problems which are of general interest at the present time.

From an operative standpoint fractures may be conveniently divided into (1) recent fractures, and (2) old-standing cases. In the former, apart from infection, operation is usually undertaken for the purpose of securing accurate adjustment or "setting" of the fragments; in the latter it may be required to remedy mal-union or non-union.

RECENT FRACTURES.

In the treatment of recent simple fractures operative measures are not to be lightly undertaken. As major surgical procedures they are not devoid of risk; they possess peculiar difficulties and dangers, and should never be attempted except under favourable circumstances. Now more than ever, with the knowledge and experience gained in the war, it is safe to say that the majority of recent simple fractures can be efficiently treated by non-operative means. There remains, however, a number of cases in which such measures offer little prospect of success, and in these operation is indicated provided that by it prognosis is definitely improved. The balance between operative risk and improved outlook must always be preserved.

The selection of cases for operative treatment requires experience and judgment, and should be guided by several factors. Of these the most important are the precise anatomical features of the fracture, which can only be determined by adequate X ray examination. In this matter the coöperation of radiologist and surgeon is essential. Skiagrams which may be fully instructive to the radiologist may not convey the necessary information from the viewpoint of surgical treatment, and the surgeon himself must clearly interpret and visualise the fracture if misconceptions and errors of judgment are to be avoided. Gross displacement of the fragments is not in itself an indication for operative treatment. In many cases reduction by manipulation may be easily and rapidly effected; in others, with much overlapping of the fragments, extension may prove efficient. Doubtful cases should always receive the benefit of preliminary non-operative treatment, and the results should be confirmed by further radiograms. The age, occupation, and general condition of the patient must also be considered. Old age does not necessarily constitute a barrier to operation, but the risks are greater and the prospects of a good functional result (even after successful operation) are more remote. In children operation will be rarely indicated; non-operative measures yield a high percentage of success, and young bones are not well adapted to all forms of operative fixation. In general, extensive comminution will contra-indicate operation.

With fractures, as with other orthopædic cases, it must also be remembered that operation is but one step in treatment, and that careful post-operative supervision is necessary if successful results are to be obtained. Statistics show that with proper selection of cases the operative mortality is negligible, and the principal risks which may be urged against the operative treatment of simple fractures are sepsis and non-union. These risks are common to all methods of direct operative fixation, but in the vast majority of cases their occurrence is due to one or both of two technical errors—faulty asepsis and imperfect fixation of the fracture—and are therefore avoidable.

* The address as delivered was illustrated by a series of excellent skiagrams.

Sepsis.—The occurrence of sepsis is disastrous. At the best it means a prolonged convalescence and ultimate removal of any foreign body employed to secure fixation; while the possibilities of osteomyelitis, non-union, pyæmia, and amputation cannot be ignored. With faulty technique the risk of sepsis is increased by permanent burying of foreign bodies in the tissues. It has also been urged that, apart from errors of asepsis, the presence of a foreign body in the bone may produce suppuration, but Hey Groves[2] has shown experimentally that this is true only if fixation is insecure; and clinical experience supports this view.

Non-union.—Apart from sepsis and insecure fixation, the risk of non-union has been exaggerated. Accurate reduction and firm fixation will result in minimum callus formation—a condition paralleled by the faint scar of an incised wound which heals accurately by first intention—and only in this sense can delayed union be considered common. Consolidation of definitive callus is at all times a tardy process, and for several weeks post-operative skiagraphic appearances may simulate non-union if no provisional callus is seen. In this connexion the manner in which the periosteum is treated at operation is of some importance: subperiosteal exposure and fixation of the fracture favours the development of subperiosteal callus and minimises the risk of non-union. With good technique non-union is rare, and must then be attributed to operative trauma and interference with the blood-supply at the site of fracture. The danger is so remote that it should not be allowed to weigh unduly against operation. In a series of 58 cases of simple recent fracture on which I have operated there has been no instance of infection, delayed union, or non-union.

THE OPERATION.

The most favourable period to operate is towards the end of the first week after injury. This delay adds nothing to the difficulties, and the tissues have then become more resistant to infection. With much swelling of the limb further postponement is desirable, and operation may be performed, if necessary, even at the end of three or four weeks. In these later cases the early callus should be carefully cleared (and preserved) with the periosteum from the ends of the bone and medullary canal before the fracture is adjusted.

Reduction by open operation does not always entail the use of direct means of fixation, and where there is no tendency to recurrence of the displacement the wound should be closed without further interference. If direct fixation is necessary various methods are available, none of which is entirely free from objection or applicable to all cases. The method to be selected will depend on the individual fracture, but certain general principles must always be followed. These may be briefly summarised as: (1) detailed planning of the operation in advance by study of the skiagrams; (2) rigid asepsis; (3) free incisions; (4) careful hæmostasis; (5) accurate anatomical reduction of the fracture; (6) secure fixation; and (7) accurate closure of the wound.

The reduction of the fracture may be, and often is, the most difficult step in the operation. It is to be accomplished by manual dexterity rather than by force, and skill in the manœuvre can only be acquired by experience. Traction on the limb by means of extension is usually unnecessary, but may be employed in cases of long oblique and spiral fractures if much overlapping is present. In these cases the greatest difficulty may be encountered, and preliminary extension for some days is advisable. It should be remembered that reduction of displacement is the prime object of the operation, and nothing short of anatomical accuracy should satisfy the surgeon. Incomplete reduction is a common cause of bad results, and should be regarded as an operative failure.

METHODS OF FIXATION.

I will now refer briefly to some of the principal methods of fixation.

Plating.

Plating, or fixation by screws and plates, enjoyed much popularity at one period. In Lane's hands the method achieved great success, but owing to adverse criticisms and the number of failures reported by others it is now generally regarded with disfavour. The mechanical defects of plates and screws as a means of fixation, to which Hey Groves[3] has drawn attention, impose definite limitations to the use of the method which have been frequently overlooked, and have contributed to many failures. It is, however, a method by which excellent results may be achieved, and is, in my opinion, still the method of choice in selected cases. Failures with Lane's plates may be attributed to (1) faulty asepsis; (2) defective mechanical technique; (3) selection of unsuitable cases; and (4) inefficient post-operative treatment. Transverse and slightly oblique fractures, especially those with irregular surfaces, and certain T-shaped and Y-shaped fractures are those best suited to plating; long oblique and spiral fractures—at all times most difficult from an operative standpoint—are not well adapted to Lane's method, and are better treated by other means. My own experience with Lane's plates has been most satisfactory. I have employed them in 28 cases of recent simple fracture with excellent results. There was no case of infection or delayed union, no loosening of screws (as proved by skiagrams), and the anatomical and functional results in all cases were perfect.

Various modifications of Lane's plates have been devised, of which the most efficient are Hey Groves's bolted and pinned plates. In these the plates are secured by bolts or split pins which transfix the entire thickness of the bone. Their application is more difficult, requiring much freer exposure of the bone, and in the event of sepsis they are more dangerous and difficult to remove; but as a means of fixation they leave nothing to be desired, and may be employed in cases where additional security is necessary.

Fixation by Bands.

The majority of long oblique and spiral fractures may be efficiently treated by means of extension. Operation is rarely necessary, and their accurate reduction by open methods may be exceedingly difficult. In these cases fixation is best obtained by the use of steel bands which bind the fragments together, and the best appliance of this type is the Parham-Martin band. Two bands may be passed round the fracture, but in many cases one will suffice to secure fixation. Adams's spring clip or bands or sutures of wire may also be employed, but are less satisfactory.

Wiring.

Fixation by wiring is most useful in such cases as fractures of the patella, olecranon, condyles of the humerus, and other small detached fragments. The patella and olecranon are best secured by passing the wire transversely through each fragment, or where the upper fragment is very small the wire may be passed through the muscle immediately above. Soft iron wire is the best material for the purpose, but silver, bronze-aluminium, and "belt lacing" wire are generally satisfactory. Silver wire may gradually undergo disintregation in the tissues, and should therefore be of stout size. Like screws, wire sutures as a means of fixation exhibit certain mechanical defects, and under the influence of continuous strong muscle pull will gradually cut their way through the bone.

Intramedullary Pegs.

The use of intramedullary pegs introduces a principle which is now frequently employed in bone-grafting operations. In this method alignment is

secured by inserting a cylindrical peg of bone or ivory into the medullary canal across the line of fracture. The procedure is simple and rapid and is admirably suited to many cases of transverse fracture, especially where there is a tendency to lateral displacement of one fragment. It also possesses the advantage that the pegs are gradually absorbed and do not remain as permanent foreign bodies in the bone, but it involves considerable interference with the blood-supply of the medulla and if sepsis occurs the presence of the peg is dangerous and its removal difficult. To minimise interference with the medullary circulation and to favour union I have employed grooved pegs in preference to those usually adopted. A size should be chosen which can be thrust into the canal without undue force, and it is wise to avoid drilling if possible.

OLD-STANDING FRACTURES.

In dealing with old-standing fractures the chief conditions which demand operative treatment are mal-union and non-union. Following simple fractures such conditions should be exceptional, but many cases have followed the compound injuries of warfare and these require special consideration. Not infrequently such cases are complicated by extensive scars in the skin and muscles, associated nerve or joint injuries, and the dangers of active or latent sepsis—all of which must be considered before operative measures are undertaken. Selection is often a matter of difficulty and should be guided by three considerations: (1) The degree of functional disability present; (2) the difficulties and risks of the operation; and (3) the prospects of definite functional improvement. It is unprofitable to correct deformity if function is not improved and such results should be regarded as operative failures. By strict attention to these points meddlesome surgery will be avoided.

Mal-Union.

With rare exceptions, mal-union is due to faults in early treatment: the principal causes being primary incomplete reduction, inefficient splinting, inefficient extension, and premature removal of support whereby a recently united fracture is exposed to weight-bearing and muscular strain before consolidation is advanced. Prevention of mal-union is generally easy; its cure may be difficult or impossible. In the shafts of long bones three principal types of mal-union occur—angulation, rotation, and overlapping. Angulation occurs most frequently in the lower limb, especially in the femur, and may be corrected by simple osteotomy. For large bones like the femur and tibia I prefer cuneiform osteotomy, as removal of a wedge yields more accurate apposition of the fragments and lessens the risk of subsequent displacement. If possible, the bone should always be divided just above or below the deformity and not through the line of original fracture; the latter may harbour latent sepsis and the bone is usually sclerotic, so that union may prove unsatisfactory. Occasionally the bone may be secured after operation by the use of pegs or a plate and screws, but this is usually unnecessary and undesirable. After operation the limb is fixed in a suitable position until sound union has occurred, and for this purpose in the lower limb I generally employ plaster-of-Paris. In civil practice angulation is frequently seen in cases of coxa vara following fractures of the femoral neck where the primary deformity has not been rectified by fixing the limb in extreme abduction. Unreduced Colles's fractures are also far too common.

Rotary displacement not uncommonly accompanies angular deformity in the femur and should then be corrected at the same time; rotation alone rarely requires correction in the lower limb. In the upper limb the most common and serious cases of rotary mal-union are found in the radius, the upper fragment being supinated while the lower is pronated. Uncomplicated cases of this deformity may be readily corrected by linear osteotomy of the radius above the insertion of the pronator radii teres and fixing the forearm in full supination, but it is frequently accompanied by angular displacement of the radial fragments towards the ulna which renders the case more difficult and necessitates further treatment.

Another example of rotary mal-union is furnished by a shoulder-joint which has ankylosed in a position of extreme external rotation. I have seen several such cases, following compound injuries of the upper end of the humerus, where the limb has been inappropriately fixed in a straight Thomas's splint. This condition may be satisfactorily treated by linear osteotomy of the humerus below the deltoid insertion.

Overlapping of the fragments constitutes a serious type of mal-union in a number of cases. In the lower limb it is a common deformity of the femur and may be associated with angular or rotary displacements. Slight degrees of shortening are readily counterbalanced by non-operative means, and in gross cases the accompanying contractures of the muscles will contra-indicate operation when the fracture is of long standing. Consequently it is of the utmost importance to restore full length to the bone during early treatment, and once the fracture is consolidated overlapping mal-union should not be disturbed. In the upper limb shortening is of little consequence and never requires operative intervention. Cross union or synostosis of the radial and ulnar shafts accounts for many cases of mal-union in the forearm. The condition is generally considered unfavourable but excellent results may be obtained provided the normal curvature of the radius has been preserved. After thorough removal of the bony bridge a fatty-fascial flap from the thigh is inserted between the bones, the flap is folded on itself so that the fascia lies in apposition with the bone on either side, and is then lightly sutured in place. When associated with angular or rotary mal-union of the radius cross union is less satisfactory and will require other methods of treatment.

Fractures of the articular ends, especially comminuted fractures, are frequently followed by mal-union. Apart from complete disorganisation of the joints in these cases, irregular or excessive callus or displaced comminuted fragments may interfere with joint function. Where the obstruction is extra-articular the condition can usually be remedied easily, but intra-articular cases are not favourable, though occasional successes may be achieved. Ankylosis of the superior and inferior radio-ulnar joints may be treated by excision of the heads of the radius and ulna respectively.

Non-Union.

In dealing with ununited fractures the first question to be decided is whether the condition present is one of delayed union or of true non-union. "Ununited fracture," says Jones,[4] "is often the result of surgical impatience," and "non-union would rarely occur if delayed union received proper attention." For delayed union operative treatment is unnecessary and the presence of non-union is to be determined by X ray examination. By this means atrophic and sclerotic types may be recognised, and when such changes are present in the bone non-union can only be remedied by operative measures.

BONE GRAFTING.

Although it is now more than a century since bone grafting was first successfully employed in surgery, its present popularity is due chiefly to the work of Albee, whose technical improvements have rendered accurate work possible and have greatly increased the scope of the method. It is, moreover, the only method available in dealing with cases in which a gap exists between the fragments if the original length of the bone is to be preserved, and it has therefore had a wide field of application in gunshot fractures, where loss of substance is a common feature.

In spite of the vast amount of work accomplished differences of opinion still exist on technical points,

but certain fundamental principles may be regarded as settled :—

1. The views of Macewen [5] on bone growth are generally accepted. He maintained that the periosteum was only a limiting vascular membrane without bone-forming properties and that osteogenesis was a function solely of the bone cell or osteoblast. These cells are present in greatest numbers beneath the periosteum and on the deep surface of the compact bone, and it is in these regions that bone growth and repair are most active.
2. All observers agree that living autogenous grafts are superior to any others.
3. Grafts should consist of the three elements—periosteum, compact bone, and medulla. The periosteum acts as a vascularising membrane and protects the underlying osteoblasts from injury ; the compact bone gives the graft mechanical strength but is almost devoid of osteogenetic power ; the endosteum is rapidly vascularised and takes an active share in osteogenesis.
4. Such grafts when contacted with living bone possess osteogenetic and osteoconductive properties ; the more favourable the conditions the more active will osteogenesis be. It is true that Murphy,[6] and more recently Gallie and Robertson,[7] denied osteogenetic properties and maintained that a graft always dies and acts only as a scaffolding, the bony tissue being gradually absorbed and replaced pari passu by new bone laid down by osteoblasts which invade the graft from the neighbouring host bone. But the evidence in favour of osteogenesis is strongly against the acceptance of this view.
5. Living autogenous bone grafts are capable of resisting *mild* degrees of infection.
6. Success in grafting is largely dependent on accurate coaptation, wide contact, and firm fixation between graft and recipient bone.
7. The growth of a graft is determined in accordance with Wolff's law, which states that changes in the form, position, or function of a bone are followed by corresponding changes in structure. As Murphy says, "The growth of a bone depends on the need for it."

While the value of bone grafting has been fully established it is acknowledged by all that failures have been common. In part these have been due to technical errors, but many of the cases are exceedingly difficult, and dense scar-tissue, muscular contractures, mal-alignment of the fragments, and latent sepsis are local conditions which may render success well-nigh impossible. For this reason a two-stage operation is often necessary. The first stage consists in excision of scar-tissue, freshening the ends of the bones, and correction of deformities, and is followed by a period of suitable splinting and massage. These measures greatly facilitate subsequent grafting and also provide a useful test for the presence of latent sepsis. If no "flare up" occurs grafting may be performed a few weeks later, but if suppuration has followed further operation should be postponed for a period of at least six months. Infection in grafting usually, though not invariably, spells failure, and no efforts should be spared to avoid it.

Two chief types of bone grafts have been employed : *Intramedullary* grafts, the ends of which are inserted into the medullary cavity of the fragments ; and *cortical* grafts, which are applied in such manner that corresponding layers of graft and host are in contact —periosteum with periosteum, cortex with cortex, and endosteum with endosteum. Intramedullary or "peg" grafts are attractive and possess certain advantages. They maintain accurate alignment of the fragments and require no additional means of fixation, but otherwise they are less satisfactory. They usually possess feeble osteogenetic power and many failures occur, either by lack of union between graft and host or by fracture or absorption of the graft which occurs frequently at the line of contact with one of the fragments. Failures are particularly common in the shafts of the radius and ulna where the medullary cavity is so small that it admits only a slender peg of compact bone almost devoid of osteogenetic properties. The mechanical advantages of the method, however, outweigh these objections in some cases, especially when dealing with a short fragment near the articular end of a bone.

In my experience better results are obtained by the use of cortical grafts, of which *sliding*, *inlay*, and *lateral* grafts are varieties. In suitable cases a massive lateral graft is, perhaps, the most satisfactory of all methods. The fractured ends are freshened laterally by longitudinal division, removing from one-third to one-half the thickness of each, so that the medullary canal is laid widely open and a large cortical graft is then applied. The graft is taken from the tibia, or in some cases it may be obtained conveniently from one of the fragments as a "sliding lateral" graft.

The grafts are usually fixed by means of stout catgut, kangaroo tendon, or silk. Wire sutures or ligatures may also be employed, but it has been my experience that in cases where stress is so great that fixation is difficult the means used is of little consequence, and failure generally follows by fracture or absorption of the graft. Grafts are most readily cut and the bones prepared by means of an Albee's motor saw. Theoretical objections to this method are not supported by practical experience, and by its use much time is saved and more accurate work is possible. Secure post-operative fixation is essential after bone grafting and is usually most satisfactorily obtained by means of plaster-of-Paris. Although the "taking" of a graft is probably determined within a few days, absolute fixation should be maintained for at least six weeks. After this period gentle massage and regulated movements of the muscles stimulate further osteogenesis and strengthening of the graft.

In simple fractures the results obtained by grafting are naturally far better than in the case of gunshot injuries and the method has been advocated extensively even for recent cases, but in my opinion bone grafting should find no place in the treatment of recent fractures and should be reserved for cases of non-union.

Overlapping and Impaction.

When no serious disability is entailed by shortening the limb non-union may be treated conveniently by other methods. Such cases will occur in the humerus and forearm, and in the femur or tibia of a patient who has previously suffered amputation of the other leg. For fractures of the shaft shortening by steppage or the "step-cut" operation is the method of choice. The ends of the bone are freshened on opposite sides in an L-shaped manner, and then secured by means of wire sutures. For fractures near the articular ends steppage is unsuitable and shortening by impaction is a better procedure. The ends are freshened transversely, and the narrower fragment is pointed and then impacted into the other. These methods yield excellent results and are generally followed by prompt union. In forearm cases both bones must be shortened together and then secured, but in the leg the fibula may be resected without fixation.

EXCISION.

Certain intra-articular fractures which are followed by non-union are successfully dealt with by excision of the loose fragment. Such cases occur in the shoulder-, elbow-, hip-, and knee-joints, and in these excision will usually be the method of choice.

In treating of fractures from an operative standpoint I trust that I have created no impression of disparagement of conservative methods. These constitute the routine treatment, and experience in recent years has but strengthened their position. Old principles have been justified, though methods and details have been modified and improved in many cases. Operative procedures occupy an important but subordinate place, and are properly employed to remedy the shortcomings and failures of non-operative measures.

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A NEW MERCURIAL FOR THE INTRAVENOUS TREATMENT OF SYPHILIS.

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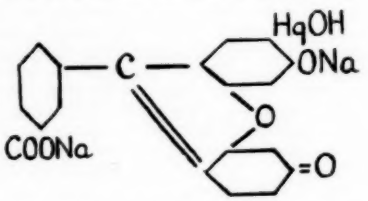
White, Hill, Moore, and Young, of Baltimore, have reported favourably on the clinical results of a new mercurial for the intravenous treatment of syphilis.[1] To this mercurial they have given the name "flumerin," and for it they claim a high therapeutic value, especially in experimental infections, along with a low toxicity.

According to Young and his co-workers flumerin is a reddish powder containing 33 per cent. of mercury in the non-ionised form. It is the disodium salt of hydroxymercuri fluorescin. The chemical formula is as follows:—



Flumerin is readily soluble in hot or cold water, and is antiseptic. Freshly-prepared solutions should be used, as after seven to ten days a sediment of metallic mercury appears. In a few instances where two to four day-old solutions were employed, no increase in the toxic effects were seen.

In the cases now under review the drug was used in a 2 per cent. solution, with a dosage ranging from 2 mg. up to 5 mg. per kilogramme of body-weight. In a few cases this dosage was exceeded. For adult males this entails a dosage which varies from 0·2 g. to 0·45 g. in each injection. Injections were usually given at bi-weekly intervals, and the average number of injections was ten. This corresponds approximately with the original method of administration. As a result of treating 25 cases of syphilis, certain definite observations have been made which would appear to justify the publication of a clinical note, and to encourage the further employment of the drug. Eight cases of secondary and 17 of tertiary syphilis were treated. The most interesting results were obtained from those treated while in the secondary stage of infection, and these are considered firstly from the point of view of cure, clinical and serological, and secondly with reference to the toxic effect of the drug. Table I. summarises the results in the secondary cases.

TABLE I.—*Summary of Results in Secondary Cases.*

—	No. of injections given.	Disappearance of lesions.	Clinical relapse during or after treatment.	W.R.[2] of blood at end of course.
Male				
1	12	Yes	Yes [1]	+
2	14	,,	,, [1]	+
3	11	,,	No	−
4	10	,,	,,	+
5	11	,,	,,	−
Female				
6	5	,,	,,	+
7	11	,,	,,	−
8	15	,,	,,	+

[1] The relapses noted occurred during treatment with flumerin.
[2] Those cases in which the W.R. was + were then treated with salvarsan with satisfactory serological result.

[1] Jour. Amer. Med. Assoc., 1922, lxxix., 877.

All the cases shown in Table I. before treatment presented gross secondary lesions. In all the Wassermann reaction of the blood (W.R.) was positive, and in seven *Spirochæta pallida* was found. The most satisfactory result was the rapid disappearance of the clinical manifestations. In one case condylomata disappeared in seven days; in another mucous patches of the throat healed in seven days. In all but one case all staining from the various forms of rash present had disappeared before the eighth injection. Adenitis was the most persistent feature, but it too had yielded, with one exception, by the fifth week. The most disturbing clinical finding was the undoubted relapse of two cases while still under treatment and when apparently clinically cured. Case 1 showed a reappearance of condylomata after the twelfth injection of flumerin, although the original condylomata had healed in one week. No spirochætes were found in the relapsed lesions. In Case 2 a hard indurated sore appeared at a fresh site, and numerous spirochætes were obtained from it.

Only in three cases did the W.R. become negative, and in one of these, Case 3, the cerebro-spinal fluid showed a positive reaction. There were no nervous symptoms in this case. The cerebro-spinal fluid was not examined before treatment was started.

The changes in the W.R. do not compare unfavourably with those following the use of any other mercurial used over a similar period.

In order to amplify the presentation of the results of treatment, two cases are quoted in detail—the most favourable and the least so.

CASE 5.—Male, aged 31. Clinical examination on first appearance showed a healed chancre on right side of prepuce with considerable induration. A copious large papulo-squamous rash, with a few follicular spots, present over trunk, limbs, and forehead. A small mucous patch noted at the right angle of the mouth. Generalised adenitis present. W.R. positive. Injections were given at weekly intervals with the results noted in Table II.

TABLE II.

Grammes flumerin.	Rash.	Mucous patches.	Adenitis.	Induration of sore.	W.R. of blood.
0·20	—	—	—	—	+
0·25	Much faded	Dry	Less marked	—	+
0·30	Staining	Healed	Present	—	+
0·30	,,	—	Slight	Clear	+
0·30	Clear	—	Clear	—	+
0·35	—	—	—	—	+
0·35	—	—	—	—	+
0·30	—	—	—	—	+
0·20	—	—	—	—	−
0·20	—	—	—	—	..
0·25	—	—	—	—	..
0·25	—	—	—	—	−

No toxic effects were noted throughout. Patient has remained well, and serological reaction of blood and cerebro-spinal fluid was satisfactory three months after last injection.

CASE 1.—Male, aged 25. He presented an indurated sore on the frenum, small, shallow, and clean. Numerous mucous patches over the scrotum and on the left side of th throat were seen. There were brown pigmented spots at th

TABLE III.

Date in 1923.	Flumerin (g.)	Sore.	Condylomata and mucous patches.	Adenitis	Complications.	W.R. of blood.
17/4	0·35	—	—	—	S.V.D. 2 days	..
24/4	0·30	Healed	Dry	—	Sl. V. & D.	+
28/4	0·25	—	Healed	Less	—	..
1/5	0·25	Noind.	—	—	S.	Susp.
9/5	0·25	—	—	Clear	D. 1 day	..
15/5*	0·30	—	—	—	S.M., no ging.	+
22/5	0·35	—	—	—	D. 2 days	+
26/5	0·20	—	—	—	—	..
9/6	0·20	—	—	—	—	..
12/6	0·25	—	—	—	—	+
19/6	0·25	—	—	—	—	..

* *Pigmentation.*—Faint staining only.
Ind., induration. S.V.D., sickness, vomiting, diarrhœa. Sl., slight. S.M., sore mouth. Ging., gingivitis.

flexures of groin and axilla. Florid anal condylomata were present. There was a marked general adenitis. W.R. positive. Spirochætes were found in the condylomata and mucous patches. Injections were given at variable intervals with results as shown in Table III.

On July 3rd, 1923, patient showed relapse of condylomata and adenitis. There were no spirochætes found. W.R. positive. There was an early gingivitis. Intravenous arsenical therapy was commenced with good results, both clinically and serologically.

Toxic Effects of Flumerin.

The toxic effects of the drug will be considered in conjunction with the series of tertiary cases. These numbered 17, and included subcutaneous gummata, skin lesions, ulcerative gummata, and Wassermann-fast patients with latent disease. All lesions disappeared under treatment with flumerin alone. The skin lesions were usually healed after about eight injections, though pigmentation persisted. The subcutaneous gummata and ulcerative lesions were slower in disappearing, ten injections being usually required. No clinical relapses occurred.

These results are good. Flumerin seems much more potent in its clinical effects than other mercurials. All workers must be familiar with the persistence of gummatous lesions under mercurial treatment alone. In one case of leukoplakia of the tongue treatment was interrupted after the tenth injection of flumerin on account of the development of a papilloma on the tongue. Histological examination showed this to be a simple tumour. The leukoplakia was not improved.

In no case was the W.R. changed from positive to negative. This is not surprising in view of the duration of treatment.

The toxic effects may now be considered. At the site of injection no ill-effect was seen. Toleration was complete in six out of the 25 cases. In five cases the complications which ensued were sufficiently severe to compel a change of treatment. In the remaining 14 cases marked reactions occurred, but it was possible to continue treatment with flumerin by carefully adjusting the dosage. The majority showed an improvement in toleration even of large injections of the drug. Sickness, headache, abdominal cramp, and diarrhœa were the chief complaints. Sickness was often immediate, and had some relation to the previous ingestion of food. A two-hours' preliminary fast is a necessity. At times vomiting followed, and lasted intermittently for 24 or, rarely, 48 hours. Headache and malaise were usually not marked. Cramp in the epigastrium and hypogastrium was the most striking complaint, and was obviously related to the excretion of the drug. After two out of a total of 280 injections it assumed alarming proportions. Diarrhœa for 24 or 48 hours was fairly frequent. The severer cases were accompanied by colic, and in three instances there was said to be the passage of blood. Pain in the mouth was occasionally mentioned. In three cases a mild gingivitis or stomatitis developed. The original workers record a number of cases of albuminuria. In the 25 now under review, renal efficiency was apparently fully maintained, and no albuminuria was found. One case calls for special notice.

A female, aged 31, with latent tertiary syphilis was given two injections of 0·20 g. and 0·25 g. one week intervening. These doses were well tolerated. She was then given 0·30 g. three days after the second injection. In eight hours she was seriously ill with colic, bloody diarrhœa, headache, and collapse. She recovered in four days under stimulant and eliminant treatment. Very small doses of flumerin were given again, but a threatened return of the symptoms compelled a change of treatment.

The age, sex, and general physical condition of the patients apparently gave no clue to their probable toleration of flumerin. The only rule for treatment is caution with the initial dose, and careful observation of its results. These toxic manifestations indicate a lesser or greater degree of acute mercurialism, and it is noteworthy therefore that no alteration in the output or character of the urine was seen. The drug is rapidly excreted, and it is considered that chronic mercurialism due to storage of the drug should be rare.

More perhaps has been made of the toxic effects than is justifiable. The vast majority of the injections were well borne, and the side-effects are no worse than those following any other intravenous mercurial. As the drug is a new one, each weak point in its use was minutely recorded, and the majority of the symptoms were elicited only after questioning the patient. Care is required in the use of flumerin, but it is not contra-indicated on account of its toxicity. Although the number of cases treated is small, certain definite observations have been made, and as further use of flumerin will be combined appropriately with arsenic or iodide—this being also the experience of the original workers—the following conclusions are suggested.

1. Gross secondary lesions show material alteration in the direction of healing within one week as a result of the administration of flumerin alone. No other mercurial preparation would appear to produce marked changes so rapidly.

2. The action is not lasting. Relapses in secondary cases may occur within a relatively short time or even while treatment by flumerin is being continued.

3. A positive W.R. is usually not altered to a negative one. In this respect flumerin does not compare unfavourably with an equivalent use of other mercurials given without salvarsan preparations.

4. Tertiary cases which present definite lesions show rapid clinical improvement with flumerin alone. The rapidity appears much greater than that produced by other mercurials, but less than by combined treatment by mercury and iodide. No effect upon the W.R. is noted. This is not significant in view of the duration of treatment.

5. Marked toxic effects of the nature of acute mercurialism were occasionally seen. Conversely cases of great toleration were noted. The reason for this is apparently not related to the patient's general physical condition.

6. Extended trial of flumerin should be made on account of its rapid antisyphilitic effect. This rapidity is its outstanding property. At the same time, even the restricted observations here recorded indicate clearly that the drug should be used along with salvarsan preparations or iodides, as the case demands.

The venereal diseases department is much indebted to Dr. H. H. Young, who placed at Prof. C. H. Browning's disposal a quantity of flumerin sufficient to treat 25 cases.

THE INCIDENCE OF KETOSIS IN CASUALTY PRACTICE.

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WITH a view to tracing, if possible, the incidence of ketosis in casualty cases, an investigation has been made of a number of patients of all ages admitted to the casualty ward of the above hospital during a period of ten months. No case was classed as ketosis which did not give positive chemical results on examination of the urine. The tests employed were Rothera's tests for acetone, and the ferric chloride test for aceto-acetic acid; while in doubtful cases in which salicylates had been given for the relief of pain Gunning's iodoform test was employed. (The tests are described at the end of the paper.)

In 393 cases examined only 14 had received general anæsthetics before examination for acetone; all of Class 1 and Class 3*b* were quite healthy until the time of admission, and about 30 per cent. of the other cases were similarly in perfect health until the day previous to their admission. The 36 cases not included in the above table consist of tumours removed and of adult circumcisions performed under local anæsthesia, and a number of cases admitted for observation and diagnosis, mostly of a medical

rather than a surgical character. None of these developed ketonuria.

Examination of the table shows that Class 2 (irritation of mucous membrane) has the largest percentage of cases of ketosis. The respiratory and alimentary systems are grouped together in this table because clinically, especially in the younger cases, acute irritation of one system was often associated with evidence of involvement of the other—e.g., an acute tonsillitis was found to be associated with pharyngitis, bronchitis, bronchiolitis, or gastritis.

Table of Cases Examined.

Class.	10 years and under.	10–20 years.	Over 20 years.	Total.	Percentages.
1. Trauma.					
(*a*) Head injuries—					
Total number	37	21	35	93	
Acetone present	32	12	7	51	55
(*b*) Other injuries—					
Total number	12	14	28	54	
Acetone present	11	5	9	25	46
2. Irritation of respiratory and gastro-intestinal tracts.					
(*a*) Respiratory tract chiefly—					
Total number	27	5	11	43	
Acetone present	23	3	2	28	65
(*b*) Intestinal chiefly—					
Total number	28	9	15	52	
Acetone present	15	8	4	27	52
3. Toxæmia.					
(*a*) Suppurations—					
Total number	27	19	42	88	
Acetone present	11	7	11	29	33
(*b*) Burns and scalds—					
Total number	18	2	7	27	
Acetone present	7	0	1	8	30

Total number of cases examined 393
Number of cases under 10 years .. 150
Total number of ketosis .. .. .. 168 = 43 %
Number of ketosis patients under 10 years .. .. .. 99 = 66 %

Note.—Seven of the intestinal cases under 10 years of age were too young for a specimen of urine to be obtained and are counted as negatives.

Sore Throat.

A large number of the cases brought to the casualty department for treatment for "sore throat" were found to have ketosis, in these there was a history of acute onset of sore throat and headache followed by drowsiness; vomiting was not usual; the mother in some cases had noticed a "sweetish smell" in the breath, and the urine showed the presence of acetone bodies. Only those cases, with five exceptions, which were admitted to the ward for treatment are included in the above table, hence the proportion of cases of this class treated as out-patients and who developed ketosis is not known. Most of the cases under ten years of age who were admitted had bronchial and pulmonary complications. One interesting case of this group was that of a woman, aged 35, admitted suffering from coma of unknown origin, and with a temperature of 102° F. Her urine was found to contain a large quantity of acetone bodies, but no other abnormal substance; sodium bicarbonate was given rectally and subcutaneously. The following day she was much better, and stated that the day before her illness she had a "very bad sore throat"; on examination her tonsils and pharyngeal mucous membrane were found to be very inflamed.

In the cases classed above in Class 2, group (*a*) (irritation of respiratory tract), it was found that the more severe the inflammation and the more rapid its onset the more marked was the ketosis. Also the younger the child the more did it appear to suffer from ketosis, as shown by the marked improvement clinically after alkali treatment, although the respiratory condition showed little or no improvement. This group would naturally include cases of tonsillectomy and adenoid curettage, but as such cases are subjected to general anæsthesia they have not been included in this series.

Irritation of Gastro-intestinal Tract.

Cases of irritation of the gastro-intestinal tract were found to fall into two sub-groups. The first sub-group (*a*) consists of those cases in which the irritation was present primarily in the lumen of the bowel, the initial picture being one of acute gastritis or gastro-enteritis. There was in most of these a definite history of dietetic indiscretion, or of the swallowing of an irritant poison, together with a gradual increase of abdominal discomfort followed by nausea and vomiting or diarrhœa. The patients were brought to hospital on account of the abdominal condition and of drowsiness, and all showed marked improvement on being treated with alkalis. One interesting case was watched from the commencement: A boy, aged 2½ years, had swallowed an unknown quantity of oil of eucalyptus; he was brought to hospital about half an hour afterwards, on the way he had vomited; his condition on arrival suggested severe shock. He was given an emetic and treatment for shock adopted. The drowsiness increased, and a specimen of urine obtained about five hours after admission showed the presence of acetone bodies. The child became more and more drowsy, but showed marked improvement upon the administration of alkalis. There was no vomiting apart from that occurring immediately after the drug was swallowed and that which resulted from the administration of the emetic; but there was marked tenderness over the epigastrium, and a mild diarrhœa commenced a few hours later. The ketosis lasted for two days after his recovery clinically.

The second sub-group (*b*) consists of cases in which the site of irritation was unknown; in some the irritation was probably due to abnormal contraction of the intestinal muscles. The initial picture in these cases was chiefly that of an "acute abdomen" accompanied by collapse, the patient having been quite well until the onset of severe abdominal pain. A typical case of this sub-group is the following. A girl, aged 11 years, was seized with an attack of severe abdominal pain while drilling at school; the child "doubled up" and "fainted," but did not vomit. On admission the temperature was 100° F., pulse 110, facies anxious and pale, pupils dilated, while she lay limply on the couch and looked very ill. The abdomen showed very little movement on respiration; there was no rigidity, but there was tenderness on the right side, particularly over the liver; the breath smelt strongly of acetone, and the urine contained acetone bodies. A few hours later ketosis was well marked, and alkali treatment cleared up the symptoms, while no further abdominal symptoms developed. Some patients of this group who had not vomited at the onset of the symptoms started vomiting as the ketosis developed; the vomiting became worse, and was accompanied by headache and marked drowsiness.

Trauma.

The cases included in Class 1 (trauma) have the next highest incidence of ketosis. These cases are divided into two groups, because in cases of head injury and concussion the symptoms of severe ketosis may lead to difficulty in diagnosing intracranial complications. The usual picture of cases of group (*a*) was the following. A child, 8 years old, was brought into hospital, very irritable, with bleeding from the nose or ear; there was a history of a head injury and unconsciousness lasting for some minutes. About five hours after admission the breath was noticed to smell of acetone and a specimen of urine obtained at this time showed traces of acetone bodies; a little later the child became very drowsy and started vomiting, and the acetone excreted increased in quantity. The child lay very limply in bed, with the face pale, and respiration chiefly of the costal type. When roused he was very irritable; vomiting was forcible, and was more marked when any attempt to swallow fluid was made. Treatment with alkali diminished and eventually cleared up the symptoms.

Several cases have been carefully watched from the time of admission, and in those where vomiting had not occurred at or soon after the time of the injury it did not commence until ketosis was definitely established. This in most children occurred about five hours after the injury, acetone being then easily detected in the breath. The vomiting and ketosis in mild cases pass off in two or three days without any treatment; but in cases of severe concussion the ketosis increases, the vomiting becomes more severe, and the child suffers from loss of fluid and exhaustion, unless alkali treatment is adopted. The vomiting and drowsiness occurring some hours after the head injury in children under 10 years of age appears to be due, in a large number of cases, more to ketosis than to any actual brain lesion; and the change in the condition of the child after alkali treatment is sometimes very surprising.

The following case is worthy of note. A boy, aged 2 years, was sent to the hospital in an apparently moribund condition as a case of possible intestinal obstruction; there was a history of severe vomiting for three days. The smell of acetone was well marked in the room in which the child was waiting; the child looked very ill, with the typical picture of severe acute ketosis. On physical examination there was nothing to account for the vomiting. The parents were carefully questioned, and stated that before the vomiting started the child had fallen from a chair on to its head and had been "very drowsy" for some time afterwards. Eight ounces of a mixture of isotonic glucose solution and potassium citrate were given subcutaneously, and sodium bicarbonate was administered by the mouth. The following morning the child was well on the path to recovery.

The cases of extracranial head injury which I examined did not develop ketosis; while in the cases of children under 10 years in which there was undoubted brain injury as evidenced by fits or spasticity a severe ketosis developed. It is interesting to note in this connexion that a large number of children develop severe ketosis after mastoid operations. Cases in group (*b*) (other injuries) include patients run over by vehicles, and work accidents and fractures. Three cases of traumatic pneumothorax in children under 10 years developed a severe ketosis within a few hours of their admission, and the relief of symptoms after alkali treatment was remarkable, the respiration becoming easier and the colour and general condition much better. Of the ketosis patients over 20 years of age, six were cases of chest injury.

Toxæmia.

The third class of case is divided into two groups: (*a*) cases of suppuration, (*b*) cases of burns and scalds. A large number of the first group of cases were of gradual onset. There was usually a history of malaise lasting for some days, a small scratch or injury which gradually formed a septic focus with local tissue destruction, and possibly a mild septicæmia. Only those cases which had a high temperature and severe toxic symptoms developed ketosis. The other cases were acute inflammatory conditions, with rapidly progressing cellulitis, lymphangitis, and marked severe general symptoms, while the onset was usually relatively very sudden. This condition occurred mainly in patients who, prior to the skin wound, were in apparently good health. All cases of this type examined showed a marked ketosis on admission.

The second group of this class consists of cases of burns and scalds. All those which developed a marked ketosis had also respiratory complications; cases which did not develop respiratory complications exhibited a mild ketosis or no evidence of acetone in the urine, although in a few cases the initial shock was severe. The ketosis cases under 10 years of age were kept under observation for some time after their discharge from hospital, and it was found that those patients who developed marked ketosis with well pronounced general symptoms suffered from general debility for a considerable time afterwards. In these cases the mother stated that the child was "fretty" and took no interest in life or in food, and the child appeared pale and listless for some weeks after discharge. Cases treated early with alkalies made a more rapid recovery.

The treatment adopted in cases of ketosis consisted in the administration of a purgative and of alkalies. An initial dose of 20 gr. sodium bicarbonate to children, 30 to 60 gr. to older patients, was given and repeated every two or four hours according to the condition of the patient. In most of the severe cases there was a well-marked improvement after the third dose. The patient was encouraged to drink plenty of fluids with glucose or lemon-juice. Prolonged administration of sodium bicarbonate was found to irritate the stomach in some instances, and citrate of potassium or of sodium, 20 to 30 gr., was used instead. In cases with severe vomiting 30 gr. sodium bicarbonate was given subcutaneously in a 5 per cent. solution of glucose or of citrate of sodium as well as by mouth. The doses were decreased as soon as the acute symptoms had passed off, and the patient was encouraged to eat carbohydrate and fruits. The urine in severe cases was found to contain acetone bodies for some days after the clinical condition had improved.

Suggested Conclusions.

The total number of cases examined is too small to allow any definite conclusions to be drawn; but the following are suggested. Cases of trauma, particularly head injuries, cases of acute irritation of the intestinal or respiratory mucous membrane, and cases of acute suppuration may be complicated by the onset of an acute severe ketosis; the younger the patient the greater is the possibility of this complication. This severe ketosis may aggravate and mask the symptoms due to the primary condition. The central nervous system, having no protection in itself against ketosis or acidæmia, suffers most, as is evidenced by the drowsiness, irritability, and headache.

Ketosis, if untreated, may lead to severe vomiting, may interfere with the patient's recovery, and may prolong the convalescence. In any case our knowledge of the central nervous system is so incomplete that the result of a temporary damage to the nerve cells by ketosis cannot be estimated; and the general debility, listlessness, and dread of mental strain seen in concussion cases of school age for months after the injury may be due to the results of ketosis rather than to a possible physical trauma at the time of injury.

Treatment consists in the administration of alkalies and aperients. In children prophylactic treatment with alkalies in cases of acute trauma and inflammatory conditions would diminish the occurrence of acute ketosis and would not cause any harm to the patient.

Tests for Acetone Bodies.

1. *Rothera's Test* (Modified).—Add ¼ in. of a mixture of powdered crystals of ammonium sulphate, 20 parts, and sodium nitroprusside, 1 part, to a test-tube half full of urine, then add ½ in. of strong ammonia solution; shake well and allow to stand. A permanganate colour develops if acetone bodies are present.

2. *Ferric Chloride Test.*—Add liq. ferri perchlor. solution, drop by drop, to a test-tube half full of urine until no further precipitate of ferric phosphate is formed; further addition of the solution gives a Bordeaux-red colour if aceto-acetic acid or salicylates are present.

3. *Gunning's Iodoform Test.*—Add an alcoholic solution of iodine and a little strong ammonia to a test-tube half full of urine; a mixed precipitate of iodoform and black nitrogen iodide is formed if acetone is present; the black precipitate disappears, leaving the yellow precipitate of iodoform.

OBSERVATIONS ON CUTANEOUS HYPERÆSTHESIA IN ACUTE ABDOMINAL DISEASE.

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IT has long been known that acute abdominal disease may be accompanied by increased cutaneous sensibility, but the almost complete silence of the text-books on the subject is sufficient evidence that the value of such hyperæsthesia is either not recognised or is under-estimated. When reference is made to the subject the information afforded is often erroneous. For example, Blos[1] writes:—

> When the pain triad has been present (skin-hyperæsthesia muscular defence, painful McBurney's spot) we have always found peritoneal suppuration. Especially skin-hyperæsthesia is of the greatest significance.

A very short series of observations would serve to show any accurate observer that cutaneous hyperæsthesia does not necessarily indicate suppuration. The attitude of most surgeons to the subject appears to be that of scepticism as to its value in diagnosis, and doubt as to any certain conclusions which may be drawn from its presence.

Historical.

More than 20 years ago Head[2] noted cutaneous tenderness over the right tenth dorsal segmental area in a case of strangulated femoral hernia containing small gut, and from many observations he came to the conclusion that the intestines might cause referred pain in the distribution of the tenth, eleventh, and twelfth dorsal segmental nerves. The first surgical observer who attempted to systematise our knowledge on the subject was Sherren,[3] whose classical paper on hyperalgesia in acute appendicitis has been grievously overlooked by the profession. Sherren investigated 124 cases of acute appendicitis and detected increase of cutaneous sensibility in 40 cases. He concluded that in appendicitis the hyperalgesia usually occupied the eleventh dorsal segmental area, sometimes encroaching on the tenth or twelfth dorsal areas. I will quote his words:—

> In appendicitis cutaneous hyperalgesia varies from a complete band extending on the right side from the middle line below the umbilicus in front to the lumbar spines behind, down to a small circular spot a little above the middle point between the umbilicus and the anterior superior spine. This band corresponds to the eleventh dorsal area of Head. Very often the tenderness extends somewhat into the tenth dorsal area also, and occasionally but not often into the twelfth dorsal area, sending a tongue-shaped process over the gluteal region. The width of the band is in the adult about 3 inches. The normal area is on the right side of the abdomen and is of a triangular shape. Its lower boundary reaches almost to Poupart's ligament, its inner almost to the middle line, and its apex is a little outside the anterior superior spine, sometimes extending to the mid-axillary line.
>
> Cutaneous tenderness in appendicitis is occasionally bilateral. I have never yet seen a case in which the hyperalgesia was present on the left side alone. In the gangrenous type of the disease no such tenderness can be discovered when the patient comes under observation. If a patient is progressing favourably the hyperalgesia clears as the symptoms of the disease improve, rarely persisting in the first attack after the sixth or seventh day.

Mr. Sherren believed that distension of the appendix was the main cause of the hyperalgesia, and concluded that sudden loss of the symptom, provided that the other symptoms remained, indicated perforation of the appendix. In cases of appendicular abscess he found only 10 per cent. exhibited hyperalgesia. His observations led him to conclude that increased cutaneous sensibility was not found in other diseases of the intestines. Further observations on the same lines were carried out by H. Robinson,[4] who investigated 200 cases of acute abdominal disease. In 123 cases of acute appendicitis Robinson found hyperalgesia in 26 cases. The areas involved corresponded for the most part to those described by Sherren, but Robinson differed from Sherren in concluding that—

(*a*) Other diseases can give rise to hypersensitive areas somewhat similar to those caused by appendicitis.

(*b*) In some cases at least tension within the appendix cannot be the exciting cause.

(*c*) The symptom is present in cases of appendicular abscess in only a slightly lower percentage of cases than those cases without abscess.

Robinson found cutaneous abdominal hyperæsthesia in one case of perforated ulcer, in three cases of gall-stones and cholecystitis, in two cases of perimetritis, and in one case of intestinal colic. Since the publication of Robinson's paper little work appears to have been done on the subject, though Ligat[5] published some observations which so far as I am aware have not been confirmed by others. My own conclusions are based on nearly 300 cases, and they confirm, modify, and extend the observations of Sherren and Robinson.

Methods of Testing for Hyperæsthesia.

There are two simple methods of testing for hyperæsthesia—the pin-stroke and the light pinch. The pin-stroke consists in drawing the point of a pin lightly across the surface of the skin of the abdomen from the costal margin down to Poupart's ligament. This should be done on both sides in several places working from the mid-line outwards. The patient is asked to indicate if at any part of the stroke the sensation varies, or feels sharper, or causes pain. To find the exact lower limit of any area of increased sensibility it is wise to draw the pin from below upward, for it is easier for the patient to feel an increase than a decrease of sensibility. One is occasionally astonished to find that there is a definite hyperæsthesia when the pin is drawn from above downwards, but none detectable when the stroke is in the reverse direction. To discriminate between the sensitiveness of the two sides of the body it is necessary to draw the pin lightly across from one to the other side of the mid-line.

Several small details must be attended to if an accurate result is to be obtained by the pin-stroke. The point of the pin must be held at the same angle to the skin all through the stroke. It is very easy (especially if the clothes or bed-clothes are not well out of the way) to finish the stroke on the lower abdomen with the pin at an angle approaching the vertical instead of the suitable angle of about 30°. This would cause a natural increase in the patient's sensation. In one case showing hyperæsthesia when I had been careful to keep the pin at the same inclination to the skin the patient remarked when the hypersensitive area was reached that it felt as if the pin had been raised more to the vertical.

At the first trial the patient may not say quickly enough when the increase in sensation occurs. If therefore any positive result be obtained it is wise to perform the test again much more slowly so as to obtain the exact limit of the affected area. Care must also be taken that the pin used has not a bent end which may scratch and vitiate the test. (Any light object could be used for the test, but a pin is the most handy object and the point affords an extremely delicate indication of sensibility.) The amount of pressure used should be very slight and uniform all through the stroke. In patients with very brisk abdominal reflexes the pin should be specially steadied by the forefinger. The sensation caused by the stroke should only just be perceptible to the patient on normal areas.

The pinch test needs little explanation. Corresponding portions of skin on each side of the middle line are gently pinched between finger and thumb and the patient asked if there be any difference in the sensation. Different areas on the same side of the body are similarly compared and any difference noted. As a rule, the abnormal areas found by one of these tests will tally with those found by the other, but occasionally one method succeeds where the other fails, or the areas affected may not be equal in extent.

In two cases I found hyperæsthesia to pinch and none to pin-stroke, whilst in two others the area hypersensitive to pin-stroke was considerably less than that due to pinch.

The cases I have investigated form a consecutive series seen during the course of 30 months. I have excluded from the list almost all the strangulated

FIG. 1.

FIG. 2.

Hyperæsthetic areas caused by appendicitis.

external herniæ since I have found practically all these cases negative. All the cases quoted were examined by me and (with very few exceptions) all the operations were undertaken by me.

Frequency of Occurrence of Hyperæsthesia.

Before estimating the frequency of occurrence of increased cutaneous sensibility it is necessary to distinguish between the terms hyperalgesia and hyperæsthesia. By hyperalgesia should be understood that state in which pain is felt on stroking the affected area lightly, whilst by hyperæsthesia one indicates a state of increased sensitiveness not necessarily causing pain on touching gently. It suffices for the patient to say that he feels a little more sharply over the affected area. Sherren detected hyperalgesia in only 32·3 per cent., whilst Robinson found hyperalgesia in only 21 per cent. of his cases of appendicitis. In my own series I found some area of hyperæsthesia in 59 per cent. of cases of appendicitis, and in 47 per cent. of all cases coming under the general category of the acute abdomen. Robinson only found hyperalgesia in about 16 per cent. of all acute abdominal cases. There is thus a great discrepancy between the figures of former observers and my own. The only feasible explanation of this is that both Sherren and Robinson took the elicitation of pain as the criterion of increased sensibility, whilst I searched for any slight exaltation of sensitiveness. I tell the patient to say at once if there is any increase of sharpness, whereas Robinson writes:—

> It is advisable to start at some distance from the usual seats of tenderness and thence to advance gradually towards the appendix region until the patient complains of a sensation of pain.

It is clear that the value of the test is greatly enhanced by taking a criterion which gives a positive result in so much greater a proportion of cases—provided, of course, that the criterion is of value. This I hope to show in this communication.

What Cases of Acute Abdominal Disease may present Cutaneous Hyperæsthesia as a Symptom?—I have found hyperæsthesia in a varying proportion of cases of acute appendicitis, perforated gastric or duodenal ulcer, cholecystitis and gall-stones, primary peritonitis, salpingitis with pelvic peritonitis, acute tuberculous peritonitis, ovarian cyst with twisted pedicle, renal colic, pyelitis, abscess of the spermatic cord, intestinal obstruction, and acute dysentery. I propose to consider first the types of hyperæsthesia associated with each of these conditions, and then to discuss certain problems which arise from the facts set forth.

Acute Appendicitis.

Hyperæsthesia of greater or less extent was found in over 59 per cent. of cases of acute appendicitis (110 out of 185). Though perhaps more common with an unperforated distended appendix it was quite frequently found with a gangrenous or ruptured appendix or an undistended unperforated viscus. Abscesses in the first few days of their formation were also frequently accompanied by hyperæsthesia of more limited extent. The position and extent of the hyperæsthesia varied greatly. In nearly all the cases it was limited to the right side of the abdomen, but in eight cases it was bilateral, though not usually so extensive on the left side as on the right. In one case only was the area of increased sensibility confined to the left side. In the great majority of cases the part affected was somewhere within an area bounded below by Poupart's ligament and above by a line drawn outwards horizontally from the umbilicus. In only a very small percentage did the area extend above the level of the umbilicus or below the level of the groin.

FIG. 3.

Hyperæsthetic band corresponding to tenth dorsal segment, caused by appendicitis.

FIG. 4.

Appendix which caused hyperæsthetic band shown in Fig. 3.

Usually only the anterior part of the abdominal wall was involved. When a complete half-girdle band was present it was in the form of a zone 2 inches broad, the upper limit forming a line which extended out from the level of the navel. This corresponds to the area usually looked on as the tenth dorsal segmental area (see Fig. 3).

The so-called appendix-triangle (Sherren) (see Fig. 5 a) was found in about one-fifth of the cases

FIG. 5.

a Dec. 21st.* b Dec. 29th. c Dec. 31st.

* Before operation and several days after.

Showing persisting hyperæsthesia after removal of appendix.

showing hyperæsthesia. It was sometimes found with a perforated or gangrenous appendix, but more commonly with an unperforated distended appendix. The typical triangle had as its boundaries the middle line, Poupart's ligament, and a line drawn outwards horizontally or slightly obliquely upwards from the umbilicus. It ended in a blunt angle just above and external to the anterior superior spine. Sometimes there was also a less marked hypersensitive triangle on the left side of the abdomen, and in one case the hypersensitive area was confined to a triangle on the left side. Complete triangles were the exception. In most cases only the lower or medial parts of the area

were hypersensitive. Very seldom, indeed, was the outer portion of the triangle alone affected. When such happened there was usually an abscess close under the affected part of the abdominal wall. There were many variations in the hypersensitive areas, some of which are here illustrated (see Figs. 1, 2, 3, and 5 a).

Speaking generally, the areas nearly always occupied some part of the region supplied by the tenth, eleventh, and twelfth dorsal segments of the spinal cord. So far as one could ascertain in the 110 cases showing hyperæsthesia, the twelfth segmental area was involved in 66 cases, the eleventh in 62 cases, and the tenth in 56 instances. There were four cases in which the sensitive area spread up to the ninth segmental area, and four cases showing hyperæsthesia in the upper part of the thigh below Poupart, presumably the first lumbar area.

The position of the appendix made no difference to the position or the extent of the hyperæsthesia. Whether the vermiform process was in the pelvis or high up under the liver the superficial tenderness was always in the lower abdomen. As will be noted later, inflammation of the gall-bladder may be accompanied by a band of hyperæsthesia just above the fold of the right groin (twelfth dorsal), but this band seldom invades the eleventh and never the tenth segmental area. The point is useful in diagnosis, as was illustrated in the case (No. 227) of a lad with acute abdominal symptoms and a history suggestive of appendicitis, who presented tenderness on deep pressure only in the right hypochondrium close under the rib margin. There was no tenderness on pressure in the right iliac region, but definite hyperæsthesia over an area just below and to the right of the navel. Diagnosis of appendicitis was confirmed at operation when a perforated appendix was removed from its position high up under the liver in the angle between that viscus and the posterior abdominal wall.

I mentioned above that the hyperæsthesia was seldom found posteriorly. It was demonstrated in that position in but 13 cases. Five of these corresponded to the tenth segment only, two to the eleventh, whilst three extended just above and below the posterior part of the iliac crest. The remainder showed hyperæsthesia extending from the last rib to the iliac crest. I have not yet seen a case of appendicitis presenting hyperæsthesia only posteriorly.

Perforated Gastric and Duodenal Ulcers.

Contrary to what one might expect, the great irritation of the peritoneum consequent on the perforation of a gastric or duodenal ulcer is not usually accompanied by hyperæsthesia of the overlying skin. In a recent series of 19 consecutive cases, I only found six which showed this symptom in any degree. One of these had a simultaneous inflammation of the appendix and should not be included since the iliac triangle of hyperæsthesia had disappeared the day after the removal of the appendix and suture of the duodenal ulcer. The other five cases were as follows:—

CASE 172 showed an area of hyperæsthesia corresponding to the lower and inner part of the right iliac triangle. Operation revealed free bile in the peritoneal cavity and a duodenal ulcer which, though sealed up, had clearly allowed the leakage.

CASE 190, in which there was a large perforation of a duodenal ulcer, showed a broad band of hyperæsthesia above the right Poupart's ligament. Within a week after suture of the ulcer the hyperæsthesia had completely disappeared.

CASE 203 was that of a duodenal ulcer, which leaked into the right subphrenic space. When seen by Dr. W. L. MacCormac soon after the onset of the acute pain there was hyperæsthesia over the whole of the lower costal region on both sides. When I saw the patient four days later there was no hyperæsthesia.

CASE 242 showed a hyperæsthetic band above the right Poupart's ligament. Operation revealed a perforation of the first part of the duodenum.

CASE 277 was that of a perforation into the general peritoneal cavity of an ulcer on the anterior wall of the stomach. Before operation pin-stroke demonstrated a narrow band of hyperæsthesia (above an inch broad) above each Poupart's ligament.

It will be noted that in all but one of these cases the hyperæsthesia was just above Poupart's ligament corresponding to part of the twelfth dorsal segmental area. I have never seen the tenth segmental area affected with a perforated ulcer of the stomach or duodenum. The hyperæsthesia in the case of the acute subphrenic abscess was probably due to direct stimulation of the lower intercostal nerves.

Cholecystitis and Gall-stones.

Amongst the 16 cases of acute disease of the biliary tract which were investigated hyperæsthesia was demonstrated in but six cases. They were as follows:

CASE 153.—A woman, aged 67, with hyperæsthesia on the right side of the abdomen forming a band between two and three inches broad immediately above Poupart's ligament. Operation revealed an acutely inflamed gall-bladder and many gall-stones.

CASE 53.—A woman with right-sided abdominal pain was found to have a broad band of hyperæsthesia above the right Poupart's ligament and crest of the ilium, back as far as the outer border of the erector spinæ. At operation the retro-peritoneal tissues from the gall-bladder down to Poupart's ligament were infiltrated with bile which glittered with cholesterin crystals. No rupture of the gall-bladder was detected. A stone was removed from the gall-bladder, which was drained. This patient died ten days later, but no autopsy was obtained.

CASE 198.—A woman, aged 37, had severe colic, and presented symptoms suggestive of cholecystitis. There was slight hyperæsthesia to pin-stroke over the tenth rib posteriorly. At operation there was a stone impacted in the cystic duct, some cholecystitis but no contiguous peritonitis.

CASE 126.—A woman, aged 58, exhibited a patch of hyperæsthesia (to pinch only) just below and to the right of the umbilicus. At operation an inflamed gall-bladder was found in contact with the parietes immediately under the area indicated.

CASE 256.—A man, aged 43, presented symptoms of acute cholecystitis. He showed an area of hyperæsthesia above and to the right of the navel, corresponding to the anterior part of the ninth dorsal segmental area. At operation the gall-bladder was found very inflamed, and there were patches of gangrene in its walls. There was a stone in the entrance to the cystic duct.

CASE 176 was that of a woman aged 32, who suffered from acute right-sided abdominal pain, and showed a band of hyperæsthesia two inches broad immediately above the outer half of Poupart's ligament and the anterior two inches of the iliac crest. At the operation there was free bile in the peritoneum, and bile infiltration of the posterior parietal peritoneum to the right of the descending portion of the duodenum. There was no ulcer of the duodenum nor perforation of the gall-bladder, and no gall-stones were found.

It will be seen that in gall-bladder disease hyperæsthesia may be detected either in the ninth segmental area, which is the segment usually regarded as the source of the nerve-supply of the viscus, or the twelfth segmental area above Poupart's ligament. The only case in which the tenth segmental area was involved was clearly due to the direct irritation of the parietes by the subjacent inflamed gall-bladder. It is quite conceivable that both the upper and the lower areas might be simultaneously involved in a case, but so far I have never seen such an occurrence. It is worthy of note that in all the cases showing supra-Poupart hyperæsthesia there was right-sided peritonitis spreading down to the iliac fossa. It is reasonable to suggest that such peritonitis may have been the cause of the superficial hyperæsthesia, since the gall-bladder is not directly supplied by any fibres from the last two dorsal segments.

Primary Peritonitis.

By primary peritonitis is meant that form in which there is no sign of extension from a viscus either by perforation or contiguity. In the series of cases examined there was one staphylococcal infection, two cases of acute tuberculous peritonitis, and one case from which no organism was recovered. Each one of these cases showed extensive hyperæsthesia.

CASE 107.—A lad, aged 16, who had had acute abdominal symptoms for six days, presented a tender and rigid lower abdomen, with extensive hyperæsthesia reaching from the mid-line in front to the vertebral spines behind. In front the affected area was limited above by a line drawn obliquely outward and upward from the umbilicus, whilst posteriorly it

reached to the last rib and first lumbar spine. The lower limit was formed by Poupart's ligament and the iliac crest. Operation revealed extensive peritonitis, congested intestines, œdematous parietal peritoneum, flakes of lymph on the intestines, and a collection of fluid in the pelvis. The appendix was not so inflamed as the rest of the intestines. Staphylococci were grown from the peritoneal exudate. The hyperæsthesia gradually disappeared as convalescence proceeded.

CASE 221.—A lad, aged 13, with acute abdominal symptoms presented extensive hyperæsthesia on both sides of the body, limited below by Poupart's ligament and the iliac crest and above by a line drawn out from the navel back to the spine. Operation demonstrated free serous fluid in the peritoneal cavity and an extensive peritonitis. The appendix showed slight catarrhal inflammation and contained some thread-worms, but the inflammation was of too slight a nature to be responsible for the peritoneal condition. No growth was made from the peritoneal effusion.

CASE 137.—Acute tuberculous peritonitis. A lad, aged 13, who suffered from diarrhœa and vague abdominal pains for three days, suddenly developed right iliac pain. Temp., 103° F.; resp., 26; pulse, 110. There was extensive bilateral hyperæsthesia in front only, extending from an inch or two above the navel down to Poupart's ligament. For an inch or two above Poupart's ligament on the right side a light pin-stroke caused him to catch his breath and cry out with pain—i.e., true hyperalgesia. At the operation acute miliary tuberculosis of the peritoneum was found. The cæcum and end of the ileum were very inflamed, matted together, and adherent to the posterior parietes in the right iliac fossa. The hyperæsthesia gradually disappeared. In a fortnight the formerly hyperalgesic area was still hyperæsthetic, whilst the rest of the area was normal.

CASE 164.—Acute tuberculous peritonitis. A young woman, who gave a history of one week's abdominal pain, presented on examination a tenderness in the right iliac fossa and hyperæsthesia reaching from just above the umbilicus to Poupart's ligament on each side. Operation proved the cause of the condition to be tuberculous peritonitis with loculated ascitic fluid, but no adhesions of the gut to the parietes.

Acute Intestinal Obstruction.

In the series of cases under review there were 25 cases of intestinal obstruction. These comprised 8 intussusceptions, 3 volvuli, 7 obstructive bands, 2 cancers of the colon, 2 cases of obstruction of small gut by a gall-stone, 1 stricture of the small gut, and 2 cases of strangulated ventral or internal hernia. Six of the intussusceptions occurred in babies in whom hyperæsthesia is not demonstrable. On no occasion did I find hyperæsthesia present with volvulus, obturation of the intestine, strangulated hernia, or stricture of the small or large gut. In the four cases which did exhibit some hyperæsthesia there was in each case some peritoneal irritation. The positive findings occurred in three cases of obstruction by bands and one recurrent intussusception.

CASE 109.—A youth, who gave a history of repeated attacks of abdominal pain and vomiting, was seized with a very acute paroxysm of pain. Within a few hours a large lump was felt in the left side of the abdomen. There was no cutaneous hyperæsthesia. Operation showed an enormous intussusception of the small intestine filling the whole of the pelvis and left iliac fossa. This was reduced fairly easily. A fortnight later a similar attack occurred, and a lump again felt in much the same position. Over the palpable lump in the left iliac and umbilical region there was on this occasion definite hyperæsthesia. On opening the abdomen it was found that the intussusception had recurred, but this time there was a great deal of adhesive non-suppurative peritonitis around the tumour formed by the invaginated bowel. Reduction was effected with some difficulty.

CASE 224.—A middle-aged man suffered from traumatic rupture of the small gut which was successfully sutured by Dr. MacCormac at St. James's Hospital. A fortnight later he had severe abdominal pain and vomiting, and there was on examination a complete right iliac triangle of hyperæsthesia. At operation I found adhesive non-purulent peritonitis in the right iliac region. The appendix was adherent to the anterior abdominal wall but was not inflamed. Obstruction had been caused by some omental bands. The adhesive peritonitis was presumably the result of a latent infection due to the intestinal rupture.

CASE 248.—A lad, aged 10, who had been operated on for tuberculous peritonitis ten months previously, was seized with acute abdominal pain of a spasmodic nature. He vomited twice. There was an area of hyperæsthesia just below and to the left of the navel, corresponding to the anterior end of the tenth segment. Operation revealed about 5 feet of purplish gut strangled by a band, which was easily divided. The hyperæsthesia gradually disappeared in the course of a few days.

CASE 201.—A lad, aged 14, who had had his appendix removed for acute inflammation nine months previously, was admitted to St. Mary's with a history of two days' pain and vomiting. Bowels not open. There was extensive hyperæsthesia anteriorly from the level of the umbilicus down to Poupart on both sides—i.e., a double iliac triangle. I diagnosed intestinal obstruction due to adhesions and accompanied by irritative adhesive peritonitis. On opening the abdomen I found the end of the ileum bound down and obstructed by soft fleshy adhesions, which fixed it in the region of the appendical stump. Free fluid was present, and the whole of the right iliac region and the ileo-cæcal part of the intestines and adjacent mesentery were inflamed. The obstructing bands were broken, and the raw surfaces invaginated by sutures. Two days later the hyperæsthesia was but a band 2 inches wide above Poupart on each side. In three more days the skin sensation was normal.

From these cases it is legitimate to conclude that intestinal obstruction is not commonly accompanied by hyperæsthesia of the skin, that when it is so accompanied there is usually considerable irritation of the peritoneum, if not adhesive peritonitis, and that the area which becomes hyperæsthetic lies within one or other of the iliac triangles. In Case 248 the strangled coil of gut had a smooth peritoneal coat, and though there was much free fluid there was no adhesive peritonitis. In this case it is quite possible that a direct stimulation of the mesentery might have produced the hyperæsthesia.

Salpingitis.—Of the four cases of salpingitis (accompanied as usual by a certain amount of pelvic peritonitis) only two showed any hyperæsthesia.

CASE 91.—A woman, aged 30, who had for some days had pain on micturition, developed pain in the right iliac region and vomited. When examined there was a triangle of hyperæsthesia in the right iliac region, but the upper level of the triangle did not quite reach to the level of the umbilicus. At the operation there was much clear fluid in the pelvis, and though the vermiform appendix was œdematous the focus of inflammation was clearly the Fallopian tube.

CASE 155.—A young woman, who gave a history rather suggestive of appendicitis, exhibited a right iliac triangle of hyperæsthesia. Operation showed no inflammation of the appendix, but pelvic peritonitis and acute tubal inflammation.

Inflamed Ovarian Cyst.—Both cases observed showed a small area of hyperæsthesia.

CASE 184, in which a large ovarian cyst was found twisted thrice on its pedicle, showed a small circular area hypersensitive to pinstroke and pinch midway between the umbilicus and the anterior spine. The appendix was not inflamed.

CASE 58.—A woman, aged 31, presenting symptoms resembling those of acute appendicitis, was found to possess hyperæsthesia over an area midway between the twelfth rib and the iliac crest on the right side posteriorly. Operation showed the appendix somewhat inflamed externally, but not within. Though the Fallopian tubes were not inflamed there was pelvic peritonitis round the right ovary, which was thrice its normal size, and contained a blood-cyst which burst on manipulation. One cannot draw any conclusions from such slight data.

Renal Cases.—Two cases of renal colic showed extensive hyperæsthesia.

In Case 76 the right tenth, eleventh, and twelfth dorsal segmental areas were affected.

In Case 94 the eighth and ninth segments were also involved. Since neither of these cases were operated on one hesitates to draw any dogmatic conclusion.

In Case 279, where pyelitis and cystitis were present, there were symmetrical bands of hyperæsthesia about 2 inches broad above Poupart's ligament.

Abscess of the Spermatic Cord.

CASE 171 was interesting from the point of view of parietal inflammation causing superficial hyperæsthesia. A man, aged 34, who had had an operation for right inguinal hernia nine years previously, developed a tender swelling under the scar of the operation. He presented hyperæsthesia over the lower and inner part of the right iliac triangle extending over Poupart into the upper part of the right thigh. At operation the appendix was normal, but there was a large inflammatory mass in the position of the intra-abdominal part of the spermatic cord. This proved to be an abscess with very thick walls.

General Remarks.

From the foregoing account it is clear that in cutaneous hyperæsthesia we have an important means of assistance in diagnosis of acute abdominal disease. Since various disorders are accompanied by similar hyperæsthesia it follows that increased cutaneous sensibility must not be taken by itself to prove the existence of any particular lesion. All the symptoms must be considered together before arriving at a diagnosis. Nevertheless, in acute disorders this particular symptom can almost always be taken as signifying inflammation or irritation of a viscus or of some part of the peritoneum.

The extent of the hyperæsthesia bears no direct or constant ratio to the extent of the lesion. General peritonitis may be entirely unaccompanied by cutaneous hyperæsthesia, whilst appendicitis without any peritonitis may cause widespread bilateral cutaneous manifestations. Patients who have a reflexly active or hypersensitive nervous system are more likely to exhibit extensive hyperæsthesia. Occasionally mental shock may have an influence, as in the following:—

CASE 7.—A lad, aged 19 years, who had been prepared for operation on the mastoid antrum, was seized with acute generalised abdominal pain whilst waiting to be taken to the operating theatre. His abdominal wall was rigid all over, and there was tenderness and hyperæsthesia over the whole abdominal area, and extending on to the lower thorax. Operation showed no peritonitis, but there was an unperforated, unadherent, catarrhally inflamed appendix containing a soft concretion. There can be little doubt that the extensive rigidity and hyperæsthesia were largely the result of the mental state of a patient expecting the operation with trepidation.

I have seen the same extensive hyperæsthesia in a patient who was proved later to be hysterical. Hyperæsthesia is usually more definite and extensive in young adolescents. In acute appendicitis it is common to find an iliac triangle of hyperæsthesia in young people between the ages of 10 and 25, rather uncommon between 30 and 40, and decidedly rare after the age 40. This is but what one would expect, for the nervous system becomes less excitable as middle age approaches.

How Long Does the Hyperæsthesia Last?

Sometimes removal of the cause, such as a diseased appendix, may lead to an almost immediate disappearance of the hyperæsthesia, but quite frequently the skin only gradually returns to normal.

CASE 120.—A girl, aged 16, exhibited a complete iliac triangle of hyperæsthesia on the right side when I examined her before operation on Dec. 21st, 1921. (See Fig. 5.) On that day I removed a distended and inflamed appendix containing a concretion and showing ulceration. On the 23rd the area of hypersensitiveness had not diminished. On the 29th it had been reduced to a band about 2 inches broad above the right Poupart's ligament. On the 31st the band was only about 1 inch broad. On Jan. 3rd the hyperæsthesia had disappeared.

The delay in the disappearance of the hyperæsthesia may be of importance in diagnosis, for it may be the last symptom remaining at the time the case is examined. When a patient complains of a recent attack of abdominal pain suggestive of appendicitis, even though all the other symptoms and signs may have disappeared, the presence of increased cutaneous sensibility in the right iliac region may be almost certain evidence of subsiding appendicitis. Few cases show any abnormal skin-sensibility for more than a week after the removal of the appendix or any other cause, but I have known a fortnight pass before the normal state was resumed.

Right-sided Hyperæsthesia.

In 122 out of 136 cases showing hyperæsthesia the left side of the abdomen was normal. In one case hyperæsthesia was only to be detected on the left side, whilst in 15 cases hypersensitiveness was noted on both sides, but was more marked and extensive on the right side. Common experience informs us that there is little, if any, difference as to the normal tactile sensibility between one side and the other, and there is little reason to suppose that the viscera are only represented on the left side of the brain. Yet the great preponderance of cases showing right-sided hyperæsthesia makes it clear either that the afferent fibres from the affected viscera causing the symptom are more closely associated with the fibres from the right side of the abdominal wall or that there is some other factor which decides that the right side shall be more sensitive. Such a factor may reasonably be found in the irritation of the parietal peritoneum on the right side. In the majority of cases showing right-sided hyperæsthesia there is a right-sided peritonitis, indicated by œdema of the parietal peritoneum and serous or other effusion within the peritoneal cavity. By far the majority of cases of peritonitis are due to a right-sided abdominal lesion. It seems reasonable to conclude therefore that irritation of the parietal peritoneum may in many cases determine the presence of right-sided hyperæsthesia.

Hyperæsthesia in the Lower Abdomen with an Upper Abdominal Lesion.

The occasional presence of a hypersensitive area just above Poupart's ligament in the case of acute disease of an upper abdominal viscus (cholecystitis, perforation of a gastric ulcer) is likely to mislead unless a reasonable explanation be forthcoming. A plausible explanation suggests itself when one records the fact that in every disease of the upper abdomen which is accompanied by hyperæsthesia below the umbilicus there is to be found peritoneal irritation or retro-peritoneal inflammation extending down to the iliac fossa and sometimes to the pelvis. The affected area in these cases is usually a narrow band corresponding to the twelfth dorsal segmental distribution, and this might easily be produced by irritation in the iliac fossa where fibres of the twelfth dorsal may be distributed. The involvement of the tenth dorsal area has almost always signified extensive hypogastric peritonitis or appendicular inflammation without peritonitis.

The Nerve-supply of the Appendix Vermiformis.

Some evidence is furnished by the cases examined to show that the appendix is supplied mainly by the tenth dorsal segment and slightly from the eleventh and twelfth dorsal segments. That evidence can be summarised as follows:—

1. Whenever in a case of appendicitis there was a complete band of hyperæsthesia, extending from the middle line in front to the spinal column behind, that band always occupied the tenth segmental area on the right side. I have never yet seen a complete band corresponding only to the eleventh or to the twelfth areas in appendicitis.

2. I have seen two cases of extensive peritonitis due to appendicitis in which the whole tenth segmental area was hyperæsthetic on the right side, but the eleventh and twelfth areas were only involved anteriorly. No case of peritonitis from other causes ever showed the tenth band distinct in this way.

3. That the tenth segment is the main source of supply is suggested by the fact that there is usually a sharp line of demarcation between the ninth segmental area and the tenth on stroking from above down, whilst on stroking from below upwards the patient may not readily detect any change of sensibility—i.e., there is a more gradual threshold from below upwards, but a sudden threshold from above downwards. This would seem to be in keeping with a diminishing nerve-supply for the appendix from the tenth to the twelfth segments.

4. It is not at all uncommon in the male for testicular pain to be felt at the onset or during the course of an attack of acute appendicitis. The tenth segment is the chief source of supply to the testicle, and the occurrence of the pain is in keeping with a common segmental nerve-supply.

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THE COMPARATIVE PHAGOCYTIC PROPERTIES OF THE LEUCOCYTES OF THE DIFFERENT BLOOD GROUPS.

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WHILE investigating some points regarding the opsonic index it was borne in on me that, ceteris paribus, there was some inequality in the amount of phagocytosis displayed by leucocytes derived from people belonging to different blood groups. Accordingly I carried out a number of similar experiments to test this point, the details of the first one being as follows (the Moss nomenclature is employed):—

I took serum from each of three normal workers belonging to group iv., iii., and ii. respectively. At the same time I prepared leucocytes from these same three by bleeding from each of them direct into citrate and washing the corpuscles obtained in normal saline; I then made opsonic mixtures with emulsion of tubercle bacilli of all the serums, using each of the three washed corpuscles in turn, and after a suitable incubation made opsonic films which I counted, the resulting intakes of bacilli per 100 leucocytes being shown in Table I.:—

TABLE I.

Serum.	EJS corps group iv.	JS corps group iii.	FM corps group ii.
EJS .. .. iv.	239	302	346
JS .. .. iii.	245	210	248
FM .. .. ii.	270	294	334

Taking the first column (EJS corpuscles group iv.) 100 leucocytes ingested 239 bacilli when put up with EJS serum, 245 with JS serum, and 270 with FM serum; in other words, 300 leucocytes belonging to group iv. ingested a total of 754 organisms when put up as to 100 with iv. serum, 100 with iii. serum, and 100 with ii. serum. Similarly 300 leucocytes belonging to group iii. took up 806 organisms, and 300 belonging to group ii. 928.

Now, in each of these three cases the serums are the same, and the emulsion of bacilli is the same, the only factor that is different being the corpuscles. Hence, this experiment shows that with similar conditions equal numbers of group iv. leucocytes take in 754 organisms, group iii. 806, and group ii. as many as 928, a result which may be expressed for convenience as 100, 107, and 123, taking the group iv. figure as the standard.

TABLE II.

Organisms used—	iv. corps.	iii. corps.	ii. corps.	i. corps.
Tubercle.	AEW100	JS119	FM174	
,,	AFH100	JS112	FM136	
			ABP124	
Staph.	AFH100	JS138	FM157	
			LC132	
,,	AFH101 } Av.	JS83	LR162	
	EJS99 } 100		JF125	
Coliform.	AFH100	JS85	FM125	
,,	EJS103 } Av.	JS111	FM108	
	AFH97 } 100			
Typhoid.	AFH100	JS112	FM121	
			LR114	
Tubercle.	EJS100	JS101	FM110	Rb.89
Staph.	EJS100	JS91	FM125	Rb.90
Coliform.	EJS100	JS95	FM96	Rb.89
Tubercle.	AFH100		FM117	
Staph.	JM100	JS103	FM116	
			JF108	
,,	GO100	MY114	FM144	
		ZK104		
Tubercle.	AFH100		FM127	
Staph.	AFH100		GD118	
,,	AFH100		FM130	

Staph. = staphylococci.

I repeated this experiment several times with emulsions of tubercle bacilli, staphylococci, and coliform organisms, using the serums of various apparently normal workers, with the exception of Rb. of group i., who was a patient with some chronic tuberculous hip trouble. The results appear in Table II.

I also varied the experiment by using iv. and ii. corpuscles, and putting them both up to several different serums with the results shown in Table III:—

TABLE III.

No. cases.	Organisms used.	iv. corps.	ii. corps.
7	Tubercle.	AFH100	FM125
6	Staph.	AFH100	GD122
4	,,	AFH100	FM131

Looking down these figures it is seen that, other conditions being equal, with one exception group ii. leucocytes always ingest more organisms than an equal number of group iv. leucocytes, the average excess over the whole series being 28 per cent. In other words, while group iv. leucocytes take in 100 organisms the same number belonging to group ii. take in 128, indicating that the powers of group ii. leucocytes in this respect are decidedly in excess of those of group iv. But the question inevitably arises as to whether the various preparations are really made under the same conditions, and there seem to be three possible variations in these "same conditions" which merit investigation: (1) The leucocytic content of the bloods derived from the various groups may differ substantially between themselves, giving rise to different percentages of leucocytes in the various preparations of washed cells; (2) the different preparations of washed cells, though intended to be made under precisely similar conditions, may, through unavoidable errors of technique bear different relations to their respective parent bloods; (3) in preparations made with group iv. serum and group ii. corpuscles the clumping of the red cells may leave the accompanying white cells under different conditions, qua phagocytosis, to those in preparations in which there is no clumping.

To test the first point I counted the number of leucocytes in the bloods of 11 normal persons belonging to group iv. and 11 belonging to group ii.; the average thus obtained was 8565 per c.mm. for group iv. blood, and 8195 for group ii., or in the proportion of 100 : 98; this difference is quite negligible, and no influence seems to be due to varying leucocytic contents in the two groups.

As regards the second point, granting that variations in the number of leucocytes makes a difference, as is certainly the case, is it likely that in some 25 cases the difference should always show itself in the one direction? The common law of chances would lead one to expect that the differences should show themselves half on one side and half on the other, and not, as I have found, very decisively on one side of the line. Furthermore, is such variation as marked as at first sight it appears? If an opsonic mixture is put up with a preparation of washed corpuscles, and again with the same corpuscles diluted with an equal volume of saline, the half number of leucocytes in the second preparation would not individually phagocytose twice as many as their fellows in the first; the ratio would not be as 20 : 10, but as log 20 : log 10, as I have found in several experiments which I did to test this point. Such a variation as 100 per cent. is unthinkable in the preparation of two specimens of washed corpuscles when made carefully in the same way, and a difference of 25 per cent., which is considerable, would on this showing only produce a difference of some 10 per cent., and nothing approaching the 28 per cent. which I have found above.

To test the third possibility, that the presence or absence of clumping of the red cells may make a difference, I made experiments by putting up several serums with both group iv. and group ii. corpuscles; altogether I used eight group iv. serums and eight group ii. serums. In all cases where group iv. corpuscles are used there will be no clumping, but when group ii. corpuscles are used there will be with the group iv. serums, but not with the group ii. ones. Thus, there will be two comparable series in which the

relative intakes of group iv. and group ii. corpuscles can be measured: (1) one series of group iv. serums where there will be clumpings, and (2) another of group ii. serums where there will be none. The results obtained showed that the relative intakes of group iv. and group ii. corpuscles in the first series was 100 : 126, and in the second 100 : 122. These figures do not suggest that any appreciable difference is caused by clumping of the red cells.

Conclusion. Other things being equal, group ii. corpuscles phagocytose some 25 per cent. more than group iv. corpuscles.

THE PASSAGE OF IODIDES INTO THE CEREBRO-SPINAL FLUID.

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IN his work "Le liquide céphalo-rachidien" Milian[1] summarises the work done on the "permeability of the meninges" to iodides up to the year 1905. With few exceptions it was found that in the meningitides—tuberculous, syphilitic, and meningococcal—oral administration of iodides was followed by their appearance in the cerebro-spinal fluid. In normal subjects, or those suffering from nervous diseases other than those associated with meningitis, no passage of iodides from blood to cerebro-spinal fluid could be demonstrated.

In 1916 Catton[2] published observations on the cerebro-spinal fluid of six patients having iodide medication by the mouth. Five of these, with no evidence of meningitis, taking 15–30 gr. of potassium iodide for three weeks to three months, were tapped on two occasions. At the first tapping as much fluid as possible was withdrawn. Since it had been reported by Barbat[3] that the fluid obtained from a second tapping of a patient receiving arsenical treatment was richer in arsenic than the first obtained fluid, Catton re-tapped his patients 48 hours to 10 days after the first puncture. In none of these fluids could iodine be demonstrated by the starch test after fusion of the fluid with potassium nitrate and sodium carbonate. In one patient with tabes, on oral iodide medication, an additional dose of 250 gr. failed to produce iodide in the fluids obtained 18 minutes and 24 hours later. In this case both chemical and electrolytic tests were applied; in the latter the control used was 0·01 per cent. of iodine—i.e., 10 mg. per 100 c.cm. These observations confirmed those of the older workers, but in 1921, Osborne,[4] using Kendall's method for the quantitative estimation of iodine, found that normal cerebro-spinal fluid contained an average of 0·018 mg. of iodine per 100 c.cm. of fluid. Oral administration of potassium iodide (50 to 100 gr. three hours before spinal puncture), though causing no rise (or a rise too small to be accurately titrated) in four cases, in two others caused a rise in the iodine content to 0·335 and 0·357 mg. per 100 c.cm. respectively. Two determinations on patients receiving potassium iodide by rectal administration only showed 1·808 mg. and 0·381 mg. of iodine in 100 c.cm. of fluid. Intravenous administration of sodium iodide led to a definite increase in the iodine content—from 0·400 to 2·784 mg. per 100 c.cm. It is interesting to note that in Osborne's series of cases by far the highest iodine value—42·308 mg. per 100 c.cm.—was obtained in a case of neurosyphilis, with marked meningeal involvement.

Investigation.

In view of these conflicting results, as compared with those of the previous workers, it was thought advisable to re-examine the question. Kendall's method is a long and tedious process. Moreover, as "one drop" of the titrating agent—N/200 sodium thiosulphate—is equivalent to 0·005 mg. of iodine, and the normal content of 100 c.cm. of cerebro-spinal fluid is only 0·018 mg.—i.e., 100 c.cm. of fluid is titrated with just over three "drops" of N/200 sodium thiosulphate—it was felt that, as in most cases only 5–10 c.cm. of fluid is available, which in a normal case would need only 3/20–3/10 "drops" of the titrating agent, Kendall's method was unsuitable for a general investigation.

Working on tests for iodides I have found that in the starch test the amount of nitric acid (+ nitrous acid) added is an important factor. No colour is obtained if an excess or too little of the acid be used, so that in doing the test it is necessary to add the acid drop by drop to the fluid, containing starch as indicator, until the optimum colour is obtained. Taking this precaution, one is able to detect 1 part of iodide in 200,000—i.e., 0·5 mg. per 100 c.cm. As Osborne had obtained over 2 mg. of iodine per 100 c.cm. of fluid after intravenous administration of sodium iodide, the application of the starch test as described above is sufficiently delicate to test the accuracy of his observations.

The following table shows the results of an investigation of ten cases, normal and abnormal.

Case.	—	C.cm. of 10 per cent. potassium iodide injected intravenously.	Time, in minutes, between injection and puncture.	Modified starch test.
1	Normal	50	12	Negative.
2	,,	50	35	,,
3	,,	50	45	,,
4	Tabes.	50	60	,,
5	,,	50	60	,,
6	Disseminated sclerosis.	50	30	,,
7	T.B. meningitis.	50	20	Positive.
8	,,	50	30	,,
9	Syphilitic meningitis (acute).	50	20	,,
10	Meningismus.	50	20	Negative.

In each case 50 c.cm. of 10 per cent. potassium iodide was injected intravenously; at intervals varying from 12 to 60 minutes, cerebro-spinal fluid was withdrawn and examined with the starch test: (1) directly by addition of HNO_3 (+ HNO_2), and (2) after fusion of the fluid with sodium carbonate and sodium nitrate.

Two practical points of considerable importance may here be noted. First, a trace of blood mixed with the fluid will produce a positive reaction due to the iodide in the blood; and secondly, care must be taken to see that the patient is free from organic heart disease before trying these tests, as in one case known to the writer serious consequences followed the intravenous injection of the potassium iodide.

Discussion.

The results given in the table are in agreement with those of the workers earlier than Osborne. The meningitides gave positive results; other diseases—tabes, disseminated sclerosis, meningismus—and "normals" gave negative results. Thus the rise observed by Osborne in normal cases is probably excessive. Our results indicate that if it occurs it is less than 0·5 mg. per 100 c.cm. This is of interest, since the amount contained in the blood after intravenous injection of 50 c.cm. of 10 per cent. potassium iodide is more than 100 mg. per 100 c.cm. of blood. We have thus a concentration of iodides many hundred times greater in blood than in the cerebro-spinal fluid. In view of the great diffusibility of iodides through tissue cells—witness their rapid excretion by the kidney—no physico-chemical theory of the formation of cerebro-spinal fluid will be satisfactory until it explains the phenomenon of the resistance of the cells of the choroid plexus to this salt. As a purely descriptive term "selective permeability" is doubtless unobjectionable, but when afforded as an explanation of the facts must be regarded as mere verbiage.

References.—1. Milian: Le liquide céphalo-rachidien, Paris, 1905. 2. Catton: Jour. Amer. Med. Assoc., 1916, lxvii., 1369. 3. Barbat: Californian State Journal, 1915, xiii., 435. 4. Osborne: Jour. Amer. Med. Assoc., 1921, lxxvi., 1384.

Clinical and Laboratory Notes.

A CASE OF PERI-ONYCHIA, DUE TO A BLASTOMYCES.

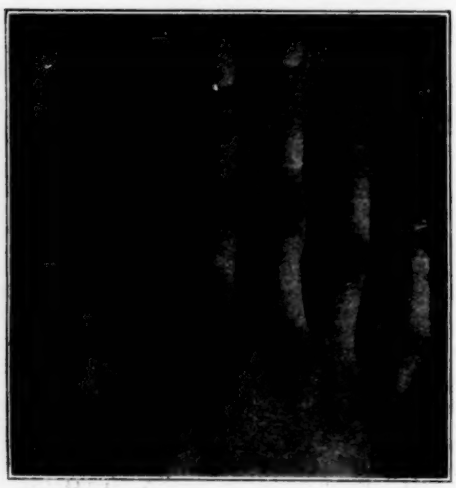
BY J. A. BRAXTON HICKS, M.D., M.R.C.P. LOND., D.P.H.,
PATHOLOGIST TO WESTMINSTER HOSPITAL;
Assisted by F. R. CHOPPING,
SENIOR TECHNICAL ASSISTANT IN THE LABORATORY.

THE following case is of interest and merits record:—

A married woman consulted me with regard to an affection of the "quicks of the nails of the right hand," which she had been told by her doctor was tuberculosis. Eighteen months before consulting me she had had a similar lesion of the left hand, the nail of the ring finger being involved, but after lasting 12 months the trouble had cleared up entirely. This freedom only lasted about a month; the present trouble then started in the right hand. The lesions on the ring and little finger of the right hand are well seen in the photograph (Fig. 1), the swelling of the peri-onychia being not so clear as the ridging and superficial destruction of the nail. She stated that they were always worse in hot weather, when her hands perspired freely, or when she had had her hands in hot water.

Bacteriology.—At the first examination very little pus was obtained, and films and cultures only revealed the presence of a staphylococcus. As heat and moisture were known to produce a free flow of pus, she was asked to foment the

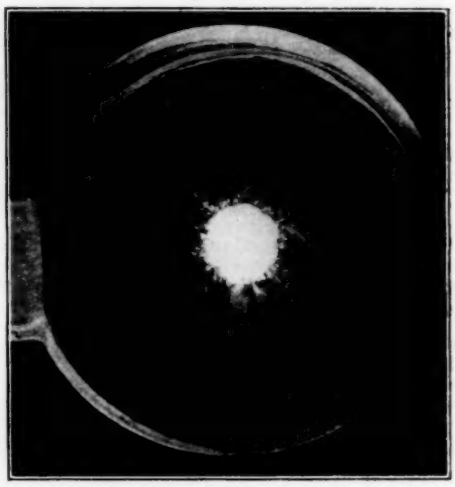
FIG. 1.



Lesions on ring and little fingers, showing swelling of peri-onychia and (more clearly) ridging and superficial destruction of the nail.

fingers freely, using a saline solution. This produced a very notable reaction and a free discharge of pus. Films showed the presence of staphylococci in small numbers, and of large numbers of yeast-like bodies and mycelial threads. These were Gram-positive. A very large number of inoculations were made on a variety of media, which included several tubes of Sabouraud's maltose agar. A *Staphylococcus albus* alone grew on the ordinary media, but on Sabouraud's medium a yeast-like growth appeared after 48 hours, in addition to staphylococcus. Sub-cultures of the yeast-like growth were readily obtained on Sabouraud's agar, but not on any other medium. At first these colonies were large, white, raised, circular, and waxy, but after some three weeks they had a most characteristic appearance due to both outgrowth and (chiefly) downgrowth of radiating fern-like processes (Fig. 2). These downgrowths penetrated quite deeply into the medium, giving the culture a very pretty appearance. The surface growth of such colonies was composed chiefly of spores, while the deeper growth was made up of both branching mycelium and spores. After several sub-cultures the organism was induced to grow on gelatin, and in the sugars, but it was quite six months before it could be grown on agar-agar. On the gelatin and the agar it grew very similarly to Sabouraud's agar, save that the frond-like downgrowths were comparatively feeble. In the sugars the mycelial elements predominated. Gelatin was not liquefied; acid, but no gas, was formed in glucose, lactose, sucrose, and

FIG. 2.



Sub-culture of yeast-like growth on Sabouraud's agar, showing characteristic appearance of outgrowth and downgrowth of radiating fern-like processes.

mannite, but not in dulcite. Growth occurred best at 28° C. During the course of the treatment of the case the same organism was obtained three times from the pus in culture. We observed the cultures over a very long period, and were struck by the tendency, as time went on, for sub-cultures to become largely mycelial and even almost bacillary in type. Finally the organism declined to grow in sub-culture at all. This organism would appear to belong to the genus Monilia, variety of Link, but classification is notoriously difficult.

The lesion resisted all treatment until iodine was tried locally, and the preparation suiting it best was colloso! iodine oil. The patient has been under observation for over two years, and up to date there is no report of a recurrence.

A CASE OF TRAUMATIC LACERATION OF A HYDRONEPHROSIS.

BY W. GIFFORD NASH, F.R.C.S. ENG.,
SURGEON, BEDFORD COUNTY HOSPITAL.

Mr. H. W. L. Molesworth, of Folkestone, recently described[1] a case of traumatic rupture of a hydronephrosis and stated that he knew of no English case or specimen which illustrated this accident. The case I am about to relate differs from those quoted by Mr. Molesworth in that the laceration did not involve the whole thickness of the hydronephrotic sac.

A married woman, aged 48, on June 22nd, 1904, whilst running at a school treat, fell forwards, her abdomen striking the ground.

Condition on Examination.—The late Dr. Horace Savory saw her the same evening on account of abdominal pain and vomiting. The pulse was 80, and there was hæmaturia, but not much collapse. Nothing could be felt in the abdomen.

[1] THE LANCET, 1923, ii., 224.

On the 23rd the morning urine contained blood, but at midday it was clear. A lump could be felt in the right half of the abdomen. In the afternoon I saw her with Dr. Savory. A large movable lump occupied the right loin, extending inwards as far as the umbilicus. The vomiting had ceased and the urine was almost clear. Temperature 99·4° F. We obtained a history of an attack of pain in the right loin 26 years previously, a second severe attack three or four years later, and in the last 13 years occasional mild attacks of pain and a swelling had been noticed. This swelling was evident a week or ten days before the accident.

Course of Case.—Our diagnosis was that a hydronephrotic kidney had been bruised by the fall. On the 24th and 25th the swelling remained much the same, and the urine contained blood. On the 26th vomiting recurred and the pain increased. The urine was very dark and blood-stained, and the swelling much larger and more tender. Operation was decided on that day.

Operation.—An incision was made in the right loin, and a large hydronephrotic kidney exposed. It was incised and bloody urine escaped. The kidney was removed, and the wound closed. The hydronephrotic kidney measured 8 × 5 × 4 inches. The pelvis was very dilated, and the whole kidney sacculated. In the floor of the pelvis was a laceration about an inch and a half long, from which, no doubt, the bleeding took place.

The patient left the nursing home in three weeks and has remained well.

FIVE CASES OF

PSEUDO-HYPERTROPHIC MUSCULAR ATROPHY.

BY R. LEONARD LEY, M.B., B.C. CAMB.,
ASSISTANT SURGEON, GREAT YARMOUTH GENERAL HOSPITAL.

THE following five cases of this disease, all of facio-scapulo-humeral type, have been seen by me at various times during the past three years. The cases are all boys of ages ranging from 14 to 5 years, belonging to two families of which the mothers are sisters. The grandparents were healthy and I can find no record of other cases in the family.

The grandparents had four daughters; one is married without children, another is married with several healthy male children of ages ranging from adult life to babyhood.

The third sister has two children, both boys; of these, one, aged 14, has had the disease for six years and is now helpless, but still has large buttocks and calves, and when I first saw him had the characteristic "swagger" gait, he climbed up himself to reach the standing position, and had the characteristic slackness about the shoulder-girdle with an expressionless face. His brother is 11 years old, has had symptoms for two years, and is now in the most marked stage with all the classical symptoms.

The fourth sister has four boys. One, aged 14 years, has had the disease for two years. Is still capable of walking. The second boy, aged 10 years, has been affected for 12 months and has typical manifestations. The third boy, aged 5 years, has large calves and buttocks. He climbs up himself and is, I think, affected, but the accuracy of the diagnosis is open to objection on the ground that he may be imitating his brothers. The youngest child is as yet unaffected.

The two sisters whose children are affected are very alike and both dark. The sister whose family is unaffected is fair and quite unlike the other two.

THE INTERNAL SECRETION OF THE TESTIS.—In Mr. Kenneth Walker's article published in THE LANCET of Jan. 5th, Figs. 4 and 5 appeared transposed, the section of the testis of a child of 3 being described as that of a fœtus, and vice versa. The transposition rendered meaningless the parallel drawn by Mr. Walker between the testis of a fœtus and that of a mole in the resting state.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

ON Jan. 8th the Sections of Medicine, Neurology, Obstetrics and Gynæcology, Psychiatry, and Surgery held a joint meeting at 1, Wimpole-street, W., to discuss

POST-OPERATIVE AND PUERPERAL MENTAL DISORDERS.

Dr. T. B. HYSLOP opened the discussion from the chair. With reference to these disorders, he said, there was probably not much difference of opinion between members of various sections as to the influence of heredity. With regard to the mental factors of causation, they were probably also all agreed that certain degrees of anxiety—such as that associated with the bearing of an illegitimate child—were sufficient in themselves to produce a certain mental colouring which led to mental disorders. The effects of severe labour, of suppression of the lochia, of previous attacks of insanity, were known; it was said among alienists that when a woman developed the habit of mental disorder when bearing a child, it was well to let her wait two years before again becoming pregnant, in order that the memory of the previous pregnancy might be obliterated. The question arose as to whether mental disorders of the puerperium occurred oftener in primiparæ than in other women. There was an old Scots saying: "Look out for the brown-eyed puerperal"; and he had found that a large proportion of sufferers from puerperal insanity were actually brown-eyed. From the clinical point of view, alienists now noted a comparative absence of the acute febrile puerperal condition; was this due to a subtle change in environment, or to a change in methods of dealing with these cases? He had observed that the puerperal attack of insanity frequently began in the night hours; the patient woke up insane, became violent, and might attack those around her, or might commit infanticide. In the latter event the case then became medico-legal. The puerperal homicidal case was most painful; the patient's symptoms might disappear before her trial, but she would be found "guilty but insane" and sent to Broadmoor during His Majesty's pleasure. He would like an expression of opinion concerning the duration of these types of mental disorder; alienists had come to recognise a three months' type, a six months' type, and so on—none of them necessarily incurable. He found himself at variance with the legal view concerning these cases, but he felt that until there was more enlightenment in the law courts it was more productive of good for medical men to keep to discussion of clinical and pathological phenomena.

From the Surgical Side.

Sir CHARTERS SYMONDS said he should deal with the subject from the surgical side only. In 40 years' experience of surgical operations he had only met with four cases of mental disturbance directly resulting from operation. The first of these was a man over 60, who had had prolonged intestinal obstruction. At operation there was an enormous evacuation of material; this case might have been due to toxæmia. The patient had to be moved to the strong room; his mental disturbance was of a type allied to delirium tremens, but he could sometimes be engaged in conversation. With good nursing he was perfectly well in six weeks, and remained well for 18 months afterwards. In this case there was no general septic state at all. In the second case the antecedent condition of the patient was interesting; she was a girl of 20, who had appendicitis with much suppuration. Her disorder took the shape chiefly of delusions; it supervened the day after the operation, the patient becoming noisy and difficult to feed. She was clearly of an emotional type, unstable and given to writing

stories; her mother and sister were sensible women, but her father's mentality was unknown, he being dead. The third case was in a highly intellectual man of over 70, who after operation went on well for eight days; he (Sir Charters Symonds) returned from a few days' absence to find the patient insane, the main feature of the case being an inability to take more than small quantities of fluid. The patient finally became very thin, with extremely dry skin. He was convinced that the condition was one of post-operative mental disturbance, although the medical man in charge of the case attributed it to senility. Chance, however, put the case into his own hands, and he injected a pint of saline into each axilla. The patient, who had apparently been about to die, was better next day, and finally recovered. There was no rise of temperature throughout. Why should this patient have had the attack? The only antecedent condition was that of very high intellectual development. The fourth case was that of a very excitable Jew, who had had a great deal of trouble with his prostate, and after operation had a severe mental attack, which made it impossible for him to be kept in the nursing home. These, then, were his only four cases of what he believed to be a very uncommon condition. With regard to the allied condition of delirium tremens, he had two or three cases a year, in his ward at Guy's Hospital, in patients with simple fracture of tibia or fibula—men who no doubt drank too much, but were never ill until after sustaining the fracture. He thought that in these cases of mental disorder following operation or acute illness there was no occasion to move the patients, at least for a period of six weeks, in which they generally improved. From his experience he had gathered that the danger in this connexion was not very great.

From the Neurological Side.

Dr. JAMES COLLIER said that in his experience as a neurologist and general physician he had not found these cases common. He had not given the condition much deep thought, but from the point of view of the nervous system he had seen every portion of the brain removed in operations for tumour, and only rarely had mental disturbance followed operation. Lesions of the brain were usually associated with reduction, not with aberration, except in syphilis. Post-concussive insanity seemed never to occur after operation. He had had four cases of mental disturbance in patients with tumours; in three of these, where the tumour was of considerable size and the shock of operation violent, mania persisted until death, with slight pyrexia throughout, and no obvious cause of death was found post mortem. In the fourth case the patient recovered; here no attempt was made to remove the tumour, which was deep-seated. The patient developed delusions and became troublesome, being sent to an asylum. In six months he recovered, and remained normal for two years; this recovery took place in spite of the cerebral injury remaining. Operations on the brain gave rise to insanity no oftener than operations on other parts. He had seen melancholia following several prostate operations, and after renal operations, but none following operations on the thyroid, pituitary, and suprarenals.

From the Obstetrical Side.

Mr. ALECK BOURNE said that those morbid conditions which lay on the borders of two specialities of medicine were in danger of neglect, as each group of workers might repudiate the responsibility of special study. The ætiology and prognosis of puerperal insanity was an instance of this incomplete study and neglect of contact between two groups of special workers. He had collected a few cases of his own, and notes of others from several hospitals; the chief difficulty in producing any account of the subject was the inadequacy of the clinical notes. The records frequently gave detailed descriptions of the labours, but only the scantiest notes of the insanity or factors of ætiological importance. Another difficulty was that these patients were quickly transferred from the lying-in hospital to an infirmary at the least sign of mental disturbance, and from the infirmary they were moved to an asylum. By following patients up to the asylum it had been possible to get a fairly complete account of their subsequent history, and in a few cases he had traced patients to their homes after so long a period as 12 years. Sufficient ætiological details had been obtained in 61 cases. In few instances full accounts of antecedent conditions were obtained, but it was clear that physical puerperal diseases had played a large part as exciting causes. In nine of the 61 patients (five single, four married) no cause of any kind of insanity was apparent. The possible influence of pregnancy in the single state was suggested by the fact that unmarried patients constituted 36 per cent. of the whole number; it might be argued that mentally feeble single women were more likely to become pregnant than those in sound mental health, but that contention was not borne out by the figures; for example, of 12 patients with previous mental trouble or bad family history, only one was single. Insanity associated with puerperal sepsis lasted for many months after the fever had subsided. After uterine infection, eclampsia was the next most important organic disease. The character of labour appeared to have no ætiological significance. Primigravidæ formed 59 per cent. of the total number of cases. In 18 cases, or 27 per cent. of the total number, there was unstable mental equilibrium or bad family history; had the notes been more detailed, this number would probably have been higher. With regard to time and manner of onset, of 64 cases noted, 4 developed insanity during the latter part of pregnancy, 6 became "mental" during labour (some being eclamptic), 39 showed the first symptoms during the first week, and only 18 were first affected during the second week. Three patients became insane from three to six weeks after delivery. The manner of onset was very similar in the great majority of cases. There were usually some nights of sleeplessness, after which the patient talked with some incoherence, and quickly developed more definite symptoms, such as aversion for food and for the baby, and delusions. Later restlessness and agitation would increase; most of the patients became maniacal, a lesser number became depressed and stuporose or morbidly religious. Coming to results, sufficient details had been obtained to show a mortality of 13 patients out of 59 (i.e., 22 per cent.). Of the 13, 6 died of the effects of infection, 2 committed suicide, 2 died of cardiac failure (one after 18 months in an asylum), and in the remainder the cause of death was not ascertained. He had traced 36 patients who had survived. Of these, 28 (78 per cent.) had been discharged from asylums or infirmaries after a varying time as "recovered," while 4 were "relieved." Four patients were still in asylums in a chronic condition of insanity. Of 13 cases of uterine infection traced, 6 died and 7 recovered. Six cases of eclampsia traced had all recovered—a result which he believed was in accord with the general experience of eclamptic insanity. Of 9 patients traced who had had previous attacks of insanity or bad family history, 3 recovered, 3 were relieved, and 3 were still confined in an asylum. The average time before recovery varied from two weeks to three years, the actual average being six and a half months. Apart from eclampsia, there was little correlation between cause and length of time in the asylum. Patients who remained insane for the longest periods were chiefly those with either no obvious ætiological factors, or very slight conditions such as mild pyrexia during the puerperium; those with a hereditary factor who recovered did so in less than six months. The details of the variety of insanity were not sufficiently precise to yield any basis for formulation of prognosis. Summing up, it was possible to say that the prognosis of puerperal insanity depended first upon the severity of the organic disease. Half of the fatal cases died of some variety of infection. The majority (77 per cent.) of the survivors recovered their mental

health, though many of them might again become insane should they be subjected to another pregnancy and labour. From letters received from husbands of patients, and from asylum reports, it seemed clear that if a patient who had had previous attacks or a collateral history of insanity became pregnant subsequently she was prone again to become insane; but should insanity be only a symptom of a severe organic disease such as puerperal sepsis or eclampsia, the probability was that it would not appear again in a future puerperium.

Discussion.

Sir MAURICE CRAIG thought that the fewness of the cases of post-operative insanity seen by the surgeon was due to the fact that the surgeon did not always get to know of cases which broke down weeks or months after the operation. Mental disorders might continue for many years afterwards; he had that day seen two cases resulting from minor operations several years ago. Patients broke down from various causes; the factor of heredity might be over-emphasised, but it certainly existed. Hypersensitivity was also important. As to the type of patient who broke down, there was an emotional type, but it was not well to assume that a person was stolid if he presented a stolid appearance. He attached great importance to the question of sleep. Certain sedatives would in certain cases stave off an attack of insanity. Sleeplessness after operation was important; it was sometimes looked upon as to be expected, and some patients could put up with it, but others could not, and in the latter the nervous system might protect itself by producing confusion. Altered blood pressure was also of importance. Mental deterioration was sometimes so rapid, in the absence of sepsis, that there must be some cause for it. Much mental instability might be avoided if the patient's nervous make-up were inquired into before operation was attempted.

Mr. H. J. F. SIMSON congratulated Mr. Bourne on his contribution to the discussion, and said that he had made it plain that from the obstetric point of view there were two types which gave rise to insanity: (1) the puerperal form due to sepsis, and (2) those with a hereditary tendency. If insane once, should a woman be allowed to become pregnant again? He was often asked to see a patient in the fourth month who had been told on the occasion of a previous pregnancy that she must not again become pregnant. If a patient was mentally unstable this was a serious thing to say, as it tended to produce a condition giving rise to puerperal insanity. If asked by such a patient to terminate the pregnancy, he thought the obstetrician should open the abdomen, and tie the tubes at the same time, informing the patient before doing so. He agreed with Sir Maurice Craig as to the importance of sleep. After the birth of the child it was well to keep the patient under the influence of some narcotic for 48 hours, to enable her to get over the shock.

Dr. R. CARSWELL believed in the existence of a great group of cases distinct from idiopathic insanities (manic-depressive states, dementia præcox, &c.); some of these cases had just been described. Many cases of transient insanity were seen during the puerperium, notably during the lactational period; they were often associated with clearly-defined lactational exhaustion, a condition commonest among the working classes. These confused, stuporose, transitional conditions were episodic, not idiopathic; if given time the patient almost certainly recovered. The number of cases of puerperal insanity had decreased; in an extensive experience he had rarely seen a case which required to be moved from a maternity hospital. This, he believed, was because the risks of infection were lessened, whilst a general advance in obstetric practice had taken place.

Dr. C. LOCKYER emphasised the importance of puerperal infectious lesions, of which the prognosis was very grave. He would suggest that the alienist too often got cases of puerperal insanity to look after; would it not be better if a skilled obstetric physician were attached to all mental hospitals?

Mr. A. CARLESS thought that there would be much fewer cases of post-operative mental disturbance if surgeons were not in such a hurry to get patients out of the nursing home or hospital. He always kept his patients in hospital for three weeks after operation. Instead of attaching an obstetrician to a mental hospital, he would suggest the attaching of a mental specialist to each obstetric hospital.

Reply.

Dr. HYSLOP, closing the discussion, said that it had to be recognised that the individual might be, as it were, a saturated solution of nervous instability; a small factor might occasion a train of ideation producing a definite psychosis. For example, to have a tooth out might cause serious trouble; and the bearing of children must be looked at from this point of view. Again, the beneficial effects of operations of general character upon insane patients were sometimes extraordinary. It must be remembered that in country hospitals which were not near a teaching hospital it would be very difficult to obtain the services of an expert gynæcologist.

MEDICAL SOCIETY FOR THE STUDY OF VENEREAL DISEASES.

DIAGNOSIS AND TREATMENT OF NEURO-SYPHILIS.

A MEETING of this Society was held at 11, Chandos-street, W., on Jan. 11th, under the chairmanship of Colonel L. W. HARRISON.

Dr. GORDON HOLMES opened a discussion on this subject. He pointed out that the term "neuro-syphilis" included many conditions differing in their clinical forms, their pathological basis, and the manner in which they reacted to treatment. It included the para-syphilitic conditions, tabes dorsalis and general paralysis of the insane, on the one hand, and interstitial neuro-syphilis on the other. It was now known that even in the earliest stages of syphilis many changes could be found in the cerebro-spinal fluid. Here an increase of cells might be found in something like 40 per cent. of all cases, although, of course, the proportion of people infected by syphilis who later in life developed nervous symptoms was not nearly as high. There was no evidence that those who later in life developed any form of neuro-syphilis were those only who in the earlier stages of infection showed changes in the cerebro-spinal fluid. Consequently it must be concluded that these changes in the cerebro-spinal fluid were, from the point of view of prognosis and treatment, of relatively little importance. It appeared that changes in the cerebro-spinal fluid were valuable as a sign chiefly when found in the second or third year. All would admit that the examination of the fluid, especially an isolated examination, or examinations repeated only over a short period, must fail to give any clear indication of whether the condition was a definitely stationary disease, a disease which for the moment was stationary but might progress, or a disease which was actually progressing. Altogether, the testing of the cerebro-spinal fluid in itself could not be a reliable guide to prognosis or to treatment. The speaker said that most of the cases of tabes in which the cell count fell and the globulin content diminished were those submitted to repeated lumbar puncture. The cell content of the cerebro-spinal fluid varied considerably at different levels. The proportion of cells decreased as one descended the spinal cord, so that there was always a larger proportion in the fluid obtained by lumbar puncture than in the fluid obtained by any other means. Many of these pathological cells persisted unchanged for a long time within the fluid. If a lumbar puncture was done several times, the proportion of these cells in the lower part of the cord was drawn off, and consequently the proportion found in the later counts was reduced.

As to the influence of treatment on the cerebro-spinal fluid in general paralysis of the insane, he could not find trustworthy evidence of marked improvement in any considerable number of cases in general paralysis, or, on the other hand, that any form of therapeutics had succeeded in altering seriously the pathological changes in the cerebro-spinal fluid, unless, of course, there was repeated lumbar puncture. It was frequently forgotten that such pathological changes in the fluid did not necessarily indicate that the lesion of the central nervous system was syphilitic. In his own practice Dr. Holmes admitted to more than one serious mistake in being guided by the changes in the cerebro-spinal fluid. Since the prominence recently given in the public press to the prevalence of venereal disease the public had begun to assume that all organic lesions of the nervous system were of syphilitic origin, which was unjustifiable. In conclusion, Dr. Holmes said that the study of the cerebro-spinal fluid was no sure guide to the efficiency of treatment or prognosis in neuro-syphilis, except in the interstitial variety. Moreover, except in interstitial syphilis the diminution of the pathological changes in the central nervous system was no indication of improvement or control of the disease. On the other hand, he would insist upon intensive treatment in certain cases of tabes and general paralysis in which efficient treatment had not been resorted to in earlier stages of the disease. The most important consideration was that the patient must be treated, not the spirochæte or the actual or presumed symptoms of its activity in the central nervous system. New tests which had been introduced, especially the examination of the cerebro-spinal fluid, had made more and more necessary a clinical investigation of every case that presented any symptom of neuro-syphilis. In his experience, and in the experience of many others on the neurological side of the question, mercury was par excellence the drug with which to treat these conditions.

The Drawbacks to Lumbar Puncture.

Dr. PHILIP PANTON referred to the drawbacks of lumbar puncture, and raised the question as to whether it was justifiable as a routine practice to do lumbar puncture in order to ascertain whether or not a patient was cured. There were two strong objections to lumbar puncture as a routine procedure; first, that it was a most unpleasant operation because the patient was apt to get lumbar puncture headache in its worst form, and secondly, because even if there was a complete negative cerebro-spinal fluid it could not be definitely said that he had been cured of syphilis. Still, there were occasions when it was justifiable to examine the fluid for this purpose, since it afforded about the best evidence obtainable of clinical or visceral cure—if that expression could be used. The patient might still, however, have syphilis progressing in his central nervous system. The examination of the cerebro-spinal fluid could only be described as a guide, and not as a conclusive determination.

Dr. D. NABARRO said that he had very rarely found lumbar puncture headaches in the case of adults, and he wondered whether the cause of such headaches, when they did arise, was the size of the needle used in doing the puncture. He always used a fine-bored needle, believing that there was then less risk of any leakage taking place afterwards. He had recently done about one hundred lumbar punctures on congenital syphilitics, and he had been surprised to find the positive W.R. and other changes pointing probably to syphilitic disease of the central nervous system in children in whom he had found no obvious symptoms whatever.

Discussion.

Dr. BRAXTON HICKS said that he had recently been working with colloidal benzolene, which he had found to be more efficient than the colloidal gold test.

Dr. H. SEMON suggested that some of the reactions which were observed by the pathologists might be deceptive. The mere fact of a positive W.R. or an excessive globulin content in the cerebro-spinal fluid was not in itself of bad augury.

Dr. DENNIS VINRACE asked whether it was possible to look forward to the injection of any curative agent into the spinal cord.

Mr. L. MYERS asked whether the cases with marked changes were being actively treated by anti-syphiltic drugs like mercury or N.A.B.

Dr. FOWLER WARD considered that to prevent lumbar puncture headache it was very necessary that the patient should be kept for 36 hours after the operation in a recumbent position.

Dr. J. G. GREENFIELD said that there was no test or combination of tests in the cerebro-spinal fluid which could distingusih general paralysis from interstitial brain syphilis. Clinicians often found it difficult in the early stages to distinguish between these conditions. On the other hand, the way that interstitial syphilis improved under treatment was a good diagnostic guide. There was no evidence that changes in the cerebro-spinal fluid might be present without any disease of the nervous system at all; the only evidence was that they might be present without demonstrable disease of the nervous system. He would like to corroborate what Dr. Gordon Holmes had said about the fallacy of emphasising too much a decrease in cells or in protein as being evidence of a clinical improvement, or of the success of the attack against the spirochæte. Even in cases of acute cerebellar abscess, where the inflammation of the brain was progressing and leading to the death of the patient, he had in quite a number of cases found a drop in the number of cells and a drop in the protein on the second puncture. He thought that that was purely a mechanical effect owing to the draining away of the cells in the lumbar cul-de-sac.

The PRESIDENT asked whether Dr. Gordon Holmes could give any opinion on the effect of bismuth on disease of the central nervous system. Bismuth was more penetrating, and possibly might be more useful, than mercury.

Reply.

Dr. GORDON HOLMES had had no practical experience of bismuth. With regard to the efficiency of treatment in the early stages of syphilis on the occurrence of neurological symptoms, his own tendency was to share the pessimism which at least all neurologists felt, that even the most efficient and intensive treatment was not likely to reduce considerably the number of cases of tabes and general paralysis.

DENTAL BOARD OF THE UNITED KINGDOM.—A course of four lectures, illustrated by lantern slides, on the Jaws in Health and Disease, will be delivered at various centres during January, February, and March. The first lecture of the course is on the Development, Normal and Abnormal, of the Bones around the Mouth, by Prof. E. Fawcett, M.D., F.R.S. The second, on the Growth of the Jaws and Palate, will be delivered by Prof. James C. Brash, M.D., who will also give the third lecture on the Genesis and Growth of Deformed Jaws and Palates. The final lecture on the Teeth in Relationship to the Normal and Abnormal Growth of the Jaws will be given by Mr. G. Northcroft, L.D.S. R.C.S. This course will be delivered at 5.30 P.M. in the Anatomical Lecture Theatre of the University of Bristol on Jan. 25th and Feb. 1st, 8th, and 15th, Mr. Thomas Loveday and Mr. W. R. Ackland presiding; in the Medical Theatre of the University of Birmingham on Feb. 8th, 15th, 22nd, and 29th Mr. Grant Robertson, Mr. John Humphreys, Mr. F. W. Richards, and Mr. Cale Matthews presiding; at the Offices of the Dental Board, 44, Hallam-street, London, W., on Feb. 21st and 28th, March 6th and 13th, Mr. F. D. Ackland presiding: in the Surgery Theatre of the Medical School, University of Liverpool, on March 7th and 21st, and April 4th and 11th, Prof. Richard Caton, Dr. J. G. Adami, and Mr. E. H. Mountford presiding. The course is intended primarily for dentists and medical practitioners. Dental students are invited to attend. Admission is free without ticket. A lecture under the same auspices and conditions on Changes now Affecting the Jaws and Teeth of English People will be delivered by Sir Arthur Keith, F.R.S., in the Lecture Theatre of the Royal College of Surgeons of England, Lincoln's Inn-fields, London, W.C. 2, on April 29th, at 5.30 P.M., Sir J. Bland-Sutton presiding.

Reviews and Notices of Books.

DIABETES MELLITUS.

Its Pathology and Treatment. By GEORGE GRAHAM, M.D. Cantab., F.R.C.P. Lond., First Assistant in the Medical Clinic, St. Bartholomew's Hospital; Physician, Royal Northern Hospital. Oxford Medical Publications. London: Henry Frowde and Hodder and Stoughton. 1923. Pp. 200. 6s.

Dr. George Graham's book forms an introduction to an immense field of clinical and pathological research which may well lead, taken with the work of numerous contemporary observers, not merely to the more proper understanding and treatment of diabetes mellitus, but to the opening of many of the hitherto sealed doors that guard the secrets of animal metabolism. The use of insulin has, of course, altered entirely the outlook in diabetes mellitus; yet Dr. Graham would not have us look upon the disease as a condition caused merely by the diminished output of the internal secretion of the pancreas, nor does he regard the correct substitution-therapy by insulin in relation to diet as the final goal in treatment.

The problem of the cause of diabetes is a most complex one, and in Part I. of this book Dr. Graham emphasises the uncertainty of our present knowledge of the chemistry of the sugar in the blood, of the mechanism of its storage in the tissues, and of the regulation of its amount in the blood-stream. The work done by Cohnheim early in the century with regard to the rôle of the muscles in carbohydrate metabolism has again been brought into prominence by recent researches; the shutting out the liver from the portal circulation by means of an Eck's fistula does not apparently grossly disorganise carbohydrate metabolism. The action of the group of endocrine glands opposing the pancreas in determining the sugar content of the blood—the thyroid, adrenals, and pituitary—is shown to be very little understood. The second part of the book is concerned with the clinical aspect of diabetes, and contains some important chapters on the anomalies of the renal threshold: it has for a considerable time been recognised that certain individuals have a low threshold and so exhibit glycosuria without hyperglycæmia; they are consequently not true diabetics at all, and the converse condition is here alluded to—fortunately a rare one—in which a high renal threshold prevents glycosuria from being a symptom of hyperglycæmia.

The chief importance of the work, however, lies in the later chapters of Part II.: Dr. Graham's thesis is that treatment should be such as to enable the β cells of the islets of Langerhans to recover their lost function as far as possible. This thesis was, of course, the idea underlying the dietetic treatment of diabetes laid down both by Dr. F. M. Allen and Dr. Graham in pre-insulin days, and now also Dr. Graham would have the dosage of insulin, as well as the diet, subordinated to it. It is undoubtedly a cause for satisfaction that patients who have been having treatment according to these "ladder-diet" methods, should be treated by insulin, not as if it were a revolutionary method of treatment, but rather as if it were an extension of the modern dietetic treatment; moreover, the dangers of giving large doses of insulin in relation to a greatly increased diet have been pointed out by E. P. Joslin and others. But though there is fairly general agreement that we should not push up the dosage of insulin beyond a point which keeps a patient in a state of bodily health on a relatively low diet, the arguments underlying this agreement are various. Joslin, for instance, deprecates a fuller diet with a larger dosage of insulin, as enabling a patient to put on weight only at the expense of rendering the equilibrium of his metabolism more unstable, and he would have the "insulin-stilts" kept as short as is compatible with good health and a freedom from glycosuria. But Dr. Graham, insisting that the best use to which insulin can be put is to enable the islet cells of the pancreas to rest and recover their lost function, makes it his object to reduce the dose of insulin as soon as it has enabled the method of under-feeding to raise the sugar tolerance, and he ascribes the failure of other observers to raise the sugar-tolerance to the fact that too much carbohydrate has been given in the diet when the blood-sugar was still above normal. In support of his method he quotes cases of diabetes mellitus in which the carbohydrate-tolerance has been so raised by giving a low diet, together with a low dose of insulin, as to enable the dose of insulin to be still further reduced. Accurate reduction of the insulin dosage in relation to diet is guided by careful and frequent estimation of the fasting blood-sugar, and Dr. Graham holds out the hope that while the blood-sugar is kept normal, the metabolism of the patient will tend to approach to normal also. It is on such grounds that he conceives the possibility that insulin "plus" diet may in the end involve, not merely a substitution-therapy, similar to the treatment of myxœdema by thyroid extract, but, further, a progress towards a remedy for the disease itself, based upon widening comprehension of the underlying pathological problems.

Dr. Graham is the first to point out that his method of treatment is only on early trial, and that the evidences in its support are as yet scanty and require testing by other workers on diabetic patients over long periods of time. It has to be remembered, moreover, that the much-hoped-for raising of carbohydrate-tolerance by the modern dietetic methods of Allen and Graham before insulin was discovered was seldom realised, although much was effected in prolonging the life and bettering the general condition in many cases. Only time will show whether such a dietary plus insulin will be productive of this great result. In the meantime it must be realised that this method, if it is to be accurate, involves frequent estimations of the fasting blood-sugar, and opinions vary as to the practicability of such estimations in the midst of general practice. Diabetes in children, it will be observed, calls for special consideration: these cases are invariably severe in type and the treatment must provide for growth as well as for preservation of life. Dr. Graham suggests a relatively large protein intake in these cases—2 g. of protein per kilogramme of body-weight a day: it is to be hoped that some such rule may prove effective, pending the time when the fate of the products of protein digestion in the liver and elsewhere shall have become better understood.

Dr. Graham's book will stimulate all those who are likely to have to take charge of cases of diabetes, none the less because physiological and pathological problems involved are clearly and succinctly stated.

LATERAL CURVATURE OF THE SPINE AND ROUND SHOULDERS.

Fourth edition, revised. By ROBERT W. LOVETT, M.D., Sc.D., Professor of Orthopædic Surgery, Harvard University. London: H. K. Lewis and Co., Ltd. With 172 illustrations. Pp. xii.+218. 12s. 6d.

Prof. Lovett has revised his monograph on Lateral Curvature of the Spine, a subject on which he has long been recognised as an outstanding authority. To the average physician and surgeon the pathogenesis of scoliosis, and the treatment of the more advanced cases, have seemed to constitute a mystery understood by the few, and rendered still more obscure in the majority of the voluminous writings on the subject. In this new edition Prof. Lovett has achieved a greater simplicity in his presentation of difficult problems. This is much to be commended, as the book will now be more easily intelligible to the large body of well-trained gymnasts, who should be encouraged to use this work as one of their standard

text-books. The past decade has seen a revival of the operative treatment of scoliosis, the present aim being to produce ankylosis of the spine in the region of the deformity by one of the methods already utilised extensively in connexion with the treatment of Pott's disease. On this development the author writes in his accustomed judicial fashion, so that the inexperienced surgeon is not likely to be tempted to adopt an experimental method which at the present time is safe only in the hands of surgeons with special training. Prof. Lovett has done much in the past to emphasise the illogical nature of the treatment of advanced cases of scoliosis by gymnastics alone, and once again he shows that true improvement is to be looked for from the methods of forcible correction in plaster jackets.

L'ENCÉPHALITE LÉTHARGIQUE, SES PARTICULARITÉS EN BELGIQUE.

La clinique, la expérimentation. Par les Drs. L. VAN BOECKEL, A. BESSEMANS, C. NELIS. Bruxelles: C. Nossent and Cie. 1923. Pp. 608.

MEDICINE knows no frontiers but the intensive study of a disease new to general recognition like encephalitis lethargica in various countries of the world is of epidemiological as well as of clinical importance. Drs. L. van Boeckel, A. Bessemans, and C. Nelis have written a work of encyclopædic character on the disease, and most of the important inquiries carried out in all countries since von Economo's first report in 1917 are effectively crystallised. In particular the pioneer work conducted by the British Ministry of Health and the Medical Research Council receives recognition. Apart from the book's unquestionable claim to rank as an authority upon this disease, it is of interest to trace in its pages the manifestations of epidemic encephalitis in Belgium itself. Sporadic cases appear to have occurred from time to time in Belgium prior to the year 1919, and as in other countries form the subjects of retrospective diagnosis. During the war, with one doubtful exception, no examples of the disease were seen in the Belgian Army, and it was not until March, 1919, that it was identified at Ruddervoorde, in Flanders. Here a classical epidemic outbreak occurred, seven cases being declared in a household of ten persons in the space of a month and a half. In three other families within a month four, three, and two cases respectively appeared. The Minister of the Interior, following the English example, appointed a special medical commission to investigate the Ruddervoorde outbreak, over which Prof. van Ermengem presided, and the identity of the disease with encephalitis lethargica was established. Towards the end of 1919 many other cases of encephalitis were recognised in Flanders, and in January and February, 1920, the disease appeared equally in Eastern Flanders (Syngem, Andenarde, Antryve, Valkegem) and in the other provinces, and later it spread from the west to the east in Belgium. The authors estimate the number of persons attacked in Belgium from the beginning of 1919 to the end of 1921 at 700. The Belgian evidence, which is rich in multiple cases, agrees with the general view that the incubation period of the disease is short of less than a month's duration.

The case mortality based on the observations of 200 cases is found in Belgium to be 31 per cent. This is higher than the English figure for 1918 (22·0 per cent.) and lower than the English figure for 1920 (49·3 per cent.). The mortality depends much on the age of the patient, increasing with advancing years. As regards sex, the Belgian mortality was found to be higher in females. The clinical types of the disease were representative of those usually encountered, including examples of the myoclonic form. The authors noted in Brussels an undue incidence of polyneuritic cases of obscure ætiology occurring when encephalitis lethargica was prevalent. Without definitely pledging themselves to the identity of the two forms of disease, they incline to the view that in epidemic periods such instances of neuralgia and neuritis are due to the virus of encephalitis. Polyneuritic forms were met with in the English outbreak of 1918 associated with definite lethargic symptoms, but few have been reported since that date. In Belgium "epidemic hiccup" is regarded as a mild form of encephalitis lethargica. Out of the 200 cases of encephalitis lethargica intensively studied, 62 died of the malady. Among the 138 survivors, 104 were kept under observation for three and a half years. Of these 58 remained cured, 2 recently developed mental and ocular sequelæ, while 44 showed various mental, choreiform or paralytic after-effects. In this sad heritage, as in France, symptomatic paralysis agitans predominated, being declared in 27 cases. The sequelæ only appeared in young subjects or in adults under 50 years of age. As a rule, the mental or paralytic after-effects ensued on severe attacks of encephalitis; but paralysis agitans was only seen to follow mild cases of the acute disease or cases in which it was manifested without localising signs.

The value of the work here considered, which is published under the auspices of the Belgian Ministry of the Interior and of Hygiene, is enhanced by a complete and detailed review of the pathology of encephalitis lethargica, and critical attention is paid to the most recent researches on the subject, for example, those of Levaditi, Harvier and Nicolau, and the work of Perdrau in this country. The work is illustrated, and has both a complete index and a copious list of references.

MODERN ASPECTS OF SYPHILIS.

By M. J. HORGAN, B.A., M.B., Ch.B., B.A.O. N.U.I., late Resident Medical Officer, General Dispensary, Nottingham. Oxford Medical Publications. London: Henry Frowde and Hodder and Stoughton. 1923. Pp. 136. 5s.

THIS little book is based on lectures and published works of Josef Kyrle, and on practical study of the methods and material of the Finger Clinic in Vienna, and sets forth the standpoint of Finger and his co-workers. The greater part of the book deals with the importance of the changes in the cerebro-spinal fluid in syphilis and their value in diagnosis and treatment. The author insists on the necessity of examination of these changes and their proper interpretation, as only by this means is there any hope of avoiding late neuro-syphilitic diseases as tabes and general paresis.

Obviously, in ideal conditions, the examination of the cerebro-spinal fluid should be done repeatedly, but in most cases one examination only can be done, and the importance of the timing of this examination cannot be exaggerated. In this book the time of election is considered to be the second or third year of the infection. This choice will not meet universal approval. In the matter of treatment intrathecal injections are condemned entirely—this is strong but probably justifiable. No mention is made, unfortunately, of treatment by intravenous medication followed by drainage of cerebro-spinal fluid—the method of reinforcement—and apparently this method does not find favour in Finger's clinic. The chapter on allergy and the luetin reaction is short but gives much food for thought. It is unfortunate that the writer has used a term "positive liquor"—it is not an accepted expression, and is likely to lead to confusion.

On the whole this is an excellent little book and will repay careful study.

DIAGNOSTIC METHODS.

Fourth edition. By H. T. BROOKS, A.B., M.D., F.A.C.P., Professor of Clinical Medicine, College of the Medical Evangelist, Los Angeles, California. London: Henry Kimpton. 1923. Pp. 109. 8s. 6d.

THIS book is distinguished from many of its kind by its brevity and its handy size and shape. Within the space of his 109 pages the author has managed

to compress a surprisingly large number of the methods of clinical diagnosis of which the need may be felt by the practitioner. He states it to have been his aim to confine himself to those procedures not requiring much apparatus or the expenditure of much time; this being the case, he was certainly well advised to omit descriptions of the more elaborate quantitative procedures, as, for example, the estimation of the blood-sugar, the calculation of the basal metabolic rate, and so forth. He was as certainly ill-advised to include details of the technique of the Wassermann reaction and of the complement-fixation test for gonorrhœa. The most complicated of the chemical tests are child's play compared to either of these, and the possibilities of error that lurk in both, and more particularly in the latter, are such as to render them both unsuitable for occasional performance by any busy man.

Apart from these last-mentioned procedures, the descriptions of the various techniques are clear, concise, and strictly practical—so free, in fact, is the book from theoretical considerations and general principles that one rather gains the impression that clinical diagnosis is simply a matter of pressing the button and getting the answer on a card. To counteract any such tendency, Dr. Brooks suggests that his book should only be used in conjunction with "some extensive work on clinical diagnosis." In this he is undoubtedly right.

DIE CHIRURGIE DES ANFÄNGERS.

By Dr. GEORG AXHAUSEN, A.O. Professor für Chirurgie in der Universität Berlin. Berlin: Julius Springer. 1923. Pp. 443. $4.50.

THIS book consists of lectures given by Dr. Georg Axhausen to his students in the University of Berlin. The lectures were intended for the beginner—that is, students commencing their clinical work—and as Dr. Axhausen says in his preface, "if students will read through the book in the holidays before they begin their clinical course, its object will have been fulfilled." The book is admirably adapted for the purpose. It does not deal with treatment, but only with methods of examination, and the deductions to be drawn from the signs found. Especially well described are the methods of examination of the hip-joint, and excellent diagrams are given to illustrate and explain Trendelenburg's sign, a useful and important test that is often omitted in text-books. There is a short chapter on minor surgery, such as the student is called upon to perform, including the necessary local anæsthesia.

Of its kind, this is one of the best books we have seen, and it might repay translation into English. The book is short and is easily read, and a student about to start work in the wards would find it an invaluable companion during his first surgical post, giving the solution to many problems and perplexities during his initiation into ward work.

TEETH, DIET, AND HEALTH.

By KURT H. THOMA, D.M.D., Assistant Professor of Oral Pathology, Harvard University Dental School. London: Werner Laurie. 1923. Pp. 226. 10*s.* 6*d.*

THIS book is public rather than scientific in its appeal, and it is highly desirable that the public should be instructed in the elements of the anatomy and pathology of dental disease, for its prevention, so far as our knowledge of its causation permits, rests with the public rather than with the professional hygienist. The book demands a modest standard of knowledge on the part of its readers, but it is clearly written in non-technical language. The statements are soberly expressed, while there is little to indicate, except in reference to various articles of diet not common in this country, that it is an American and not a British production.

We notice that Dr. Thoma uses the "slogan," a clean tooth never decays. In our view it is a somewhat misleading phrase likely to convey a false sense of security. Cleanliness in the sense implied is beyond the reach of the most thorough dental hygiene, while there are some puzzling anomalies; it is not uncommon to see mouths which are kept as clean as is possible, with many carious teeth, and others quite uncared for with entire immunity. To those who are under the illusion that dental conditions are better in the United States than in this country, it may come as a surprise to hear that dental disease is just as common. Statistics at the Mayo Clinic showed that 87 per cent. of patients suffered from infected teeth, while out of 846 children in Cleveland, only three were found with perfect teeth. Even English statistics do not show such a high incidence of dental disease as this, though possibly the American standards are higher. In an account of the evolution of the teeth we are told that the canines are formidable weapons in the boar, *elephant*, and walrus. The tusks of the elephant are, of course, incisors. We dissent from the statement that the first permanent molars begin to calcify ten weeks before birth. C. S. Tomes says that calcification commences in these teeth just before birth, and N. Bromell gives the date as one month before birth. Again, the statement that all the permanent teeth, with the exception of the first molar, commence to calcify after the first year seems to err in the other direction. All the authorities on dental anatomy agree that calcification of the incisors commences during the first year. It is interesting to note that the author holds that sugar does the greatest harm by attracting free lime salts in the body so that the teeth may be imperfectly calcified. Not every dietitian will agree with him that sugar is not a natural food and should have no place in the dietary.

If all parents studied this book the task of the dentist would be made easier. The chapter on Mouth Hygiene is full of practical details. The proper way to brush the teeth is illustrated by some good diagrams. In view of some recent correspondence in our columns, it is interesting to note that Dr. Thoma advocates brushing the gums as well as the teeth. The book is well printed and the illustrations are good. Altogether it is an excellent production.

THE PHYSIOLOGY OF MUSCULAR EXERCISE.

By the late F. A. BAINBRIDGE, M.A., M.D., D.Sc., F.R.C.P., F.R.S., Professor of Physiology, University of London. Second edition, revised by G. V. ANREP, M.D., D.Sc. Lond., Senior Assistant in Physiology, University College, London. London: Longmans, Green and Co., 1923 Pp. 226. 10*s.* 6*d.*

MOST physiologists are in agreement that the author of this work, one of the most gifted physiologists in the country, gave us in this book one of the best monographs on physiology ever written in any language. The early exhaustion of the edition gives further proof of this. In the present edition some nine pages of text have been added, there is one new figure, and the index has been improved. The added matter consists chiefly of references to English work by Hill, Lupton, Anrep and Cannan, Douglas and Haldane, and Barcroft. There are also references to the work of Krogh on capillary reactions and of Krogh and Lindhard on the respiratory quotient. Apart from these additions the editor has left the text as it stood, and in our opinion he has been wisely advised in this, for it could not well have been improved.

BLOOD CHEMISTRY, COLORIMETRIC METHODS.

For the General Practitioner. With Clinical Comments and Dietary Suggestions. By WILLARD STONE, M.D., Attending Physician, Los Angeles General Hospital, U.S.A. New York: Paul B. Hoeber, Inc. 1923. Pp. 75. $2.25.

THIS book gives a good account of the methods which are in use in the United States for estimating the non-protein nitrogen, urea, uric acid, creatinine,

sugar, cholesterol, and chloride, which are present in blood. In nearly every case the final determination depends on the use of a colorimeter. The description of the method is clear and concise, and will save the laboratory worker much trouble in looking up the original papers, the reference to which, however, is always given. Although many of the methods are not by any means too difficult for the practitioner to learn, the time factor may prevent his attempting to use them. The suggestion that an assistant could easily learn to carry out the technique is a practical one. A short account of the clinical value of the estimation is appended to each section, and these seem to be carefully considered. Some 20 pages are devoted to the question of dietary control of disturbances of metabolism. The most important part is that concerned with the acid and alkali content of the various foodstuffs, and tables are given showing the acid and alkali produced by different foodstuffs. Joslin's tables for the treatment of diabetes are given in preference to Allen's.

The book is typically American in many of its phrases, and some unusual words are used, but on the whole it reads easily. It should be of considerable value both to the laboratory worker and to the clinician.

WHY BE FAT?

By CECIL WEBB-JOHNSON, M.B., Ch.B., Major, R.A.M.C. (T.F.), late Civil Surgeon and Officer Commanding Station Hospital, Dum-Dum. London: Mills and Boon, Ltd. 1923. Pp. 174. 5*s*.

THIS book should find a ready sale among those who suffer from obesity—it is well and wittily written, and contains a great deal of useful matter. The advice given by the New York editor, to anyone wishing to get thin, "(1) eat everything you don't like, (2) do everything you don't want to," is by no means the correct treatment. The main lines recommended by the author are, to eat less of everything, and, what is equally important, to drink much less of everything, to sleep less, to take more exercise, to take cold baths, and generally lead as healthy a life as possible. The author condemns milk in such strong terms as to give the impression that he is the victim of an *idée fixe* on the subject. He even goes so far as to say that, in his opinion, milk is the chief cause of cancer of the stomach and bowel, besides being the commonest cause of dental caries and pyorrhœa. This violence is a defect in a book otherwise wholly sensible and well written.

THE FIGHTING INSTINCT.

By PIERRE BOVET, Litt.D., Professor of the University of Geneva, Director of the Jean-Jacques Rousseau Institute, Geneva. Authorised English Translation by J. Y. T. GRIEG, M.A. London: George Allen and Unwin. 1923. Pp. 252. 10*s*. 6*d*.

THIS book, by a Swiss educationist, was prompted by the European war, and the thought that the investigation of its immediate causes should give place to a more general inquiry. Certain truisms had assumed the authority of common sense: that man's pugnacity made wars inevitable; that political States regressed to infantile modes of behaviour, and let themselves go in outbursts of destructive anger; or that the future depended upon pacificist teaching. With these propositions as a starting point, Mr. Bovet makes a thorough examination of the fighting instinct in its different modifications and sublimations, and applies the teachings of modern psychology as a means of understanding human behaviour. He draws upon many writers, and gives the impression that he uses them not to find support for his own views, but for what he can learn from them. Unfortunately, the word "pacificist" has acquired a narrow and controversial connotation; but in the proper sense of the word all good citizens are pacificists, and few would wish to reject the conclusion that "The pacificist ideal is in the line of human development, such as this is shown to be in individual and social psychology."

The book is neither Utopian nor a sentimental plea for peace, but a scientific and practical exploration of the possibilities of so controlling our social heredity as to render possible a society of nations in which armed conflicts will no longer arise. The translator has done his work well, and the book deserves a wide circulation.

JOURNALS.

BRITISH JOURNAL OF CHILDREN'S DISEASES, October to December, 1923.—Dr. John Thomson, of Edinburgh, contributes a paper on Peculiar Fatal Convulsions in four children, whose father suffered from lead poisoning, in which the chief points of interest are as follows: (1) All the children born after the father's lead-poisoning began were similarly affected, although the mother remained quite healthy; (2) the child whose case is described continued until near the end in excellent bodily and mental health apart from fits, and showed no signs of rickets, indigestion, mental dullness, or mental peculiarity; (3) the attacks were very different in their phenomena from ordinary infantile convulsions, affecting the respiratory apparatus specially and yet not resembling those in laryngismus or status lymphaticus.—In a paper on Severe Tuberculin Reactions, Scrofula, and Status Lymphaticus, Dr. Charles McNeil, of Edinburgh, states that in a small number of cases of tuberculous infection the tuberculin cutaneous reactions are remarkably severe. In the majority of these severe tuberculin reactions the type of lesion is that formerly described as scrofulous, and commonly includes a scrofulous or phlyctenular conjunctivitis. Dr. McNeil recommends that the term "scrofula" should be retained to describe those types of tuberculous infection which are associated with the status lymphaticus, and which in consequence exhibit an intensified reaction to the tubercle bacillus and its poisons.—Dr. Norman B. Capon, of Liverpool, reports a Case of Tuberculosis in Infancy to illustrate the diagnostic difficulties presented by tuberculosis at that age. He points out that though the condition may be strongly suspected when the child's mother is proved conclusively to be the subject of active tuberculosis, it has no definite symptomatology, pallor, wasting, enlargement of the liver and spleen being the most frequent findings. In Dr. Capon's case, in which death took place 41 days after birth, it was impossible to state definitely the route by which infection occurred, especially as the placenta was not examined histologically; but the advanced state of the lesions in the child's viscera was in favour of the infection having been intra-uterine.—In a paper on Dilatation of the Aorta in Children Associated with Chronic Interstitial Nephritis Dr. J. H. Sheldon, of Wolverhampton, reports a case in which dilatation of the aorta in a boy, aged 10, was produced by the high blood pressure resulting from chronic interstitial nephritis. All other causes of aortic dilatation could be excluded such as syphilis, acute infections, congenital malformation, and arteriosclerosis. He alludes to a similar case reported by Evans, and states that in both cases the structure of the aorta post mortem showed very little departure from the normal, indicating that the dilatation was probably a mechanical consequence of the hypertension.—Dr. Angelica Panayotatou, of Alexandria, reports a cases of Typhoid Fever Complicated by Purpura Hæmorrhagica. The patient was a girl, aged 4, who on the fourteenth day of disease developed ecchymoses on the chest followed by epistaxis, melæna, and hæmorrhages from the ears. Various modes of treatment were employed without success, and death took place on the eighteenth day of disease. —The abstracts from current literature are devoted to nervous and mental diseases.—A very full index to the volume forms a useful guide to contemporary pædiatric literature.

The Conduct of Medical Practice.

A Series of Articles by Experts dealing with the Difficulties Encountered in Professional Life and How to Meet Them.

III.—STATUTORY OBLIGATIONS: HOW TO FULFIL THEM.

BY JAMES NEAL, M.R.C.S. ENG.,
GENERAL SECRETARY OF THE MEDICAL DEFENCE UNION.

It is an honour for a man to keep aloof from strife.
Proverbs xx. 3.

I AM convinced that most of the medico-legal difficulties met with in medical practice are preventable. Many are due to sheer carelessness or slackness, possibly to overlooking some small point which at the time seems unimportant, but which subsequently proves to be vital; some to a want of knowledge of the various statutes that directly affect a medical practitioner in the daily exercise of his profession. In some respects it is unfortunate that the teaching of law is not a part of the medical curriculum. A certain amount of law is taught to those who are training to become accountants, bankers, surveyors, and others, but it is a subject which is almost entirely neglected in the case of the medical student.

The General Medical Council.

Every medical practitioner should know the functions and powers of the General Medical Council; the privileges and obligations which he acquires by the act of registration; his responsibilities in the treatment of his patients; and his duties with regard to certification of all kinds. The Council was established by the Medical Act of 1858. It consists of 38 members. Essentially it is a council of education and registration. It exercises supervision over the various qualifying bodies, and it prepares and publishes the Medical Register. No matter what medical diplomas or degrees a man may have obtained, he is not legally entitled to style himself doctor or surgeon, or to practise as such in this country until his name has been entered on the Medical Register.

The Council has no control whatever over unregistered practitioners, but, by virtue of its power to erase from the Register the name of any medical practitioner adjudged guilty of "infamous conduct in a professional respect," it exercises a disciplinary control over the medical profession. In such cases it is the sole judge of all questions of fact, and there is no appeal from its decision on a question of professional conduct arrived at after due inquiry at which the accused person has had a full opportunity of being heard, and of which he has received due notice. The Council cannot take evidence on oath, it has no power to compel the attendance of witnesses, and it cannot award any costs.

Registration and its Effect.

The medical student who passes his final examination and obtains a degree or diploma should register before he commences any kind of professional work. The procedure to effect registration consists merely in forwarding an application to the Registrar of the General Medical Council* with the statutory fee of £5 1s., and this should be done at the earliest moment possible after becoming qualified. Once registered, it only remains for the practitioner to keep the Registrar notified of any change of address, and to reply to any formal inquiry which he may receive from the Registrar as to the correctness of the entry of his name and address in the Register.

By the act of registration the practitioner acquires certain privileges and certain obligations. He becomes entitled to practise medicine, surgery, and midwifery in the United Kingdom, and, subject to any local laws, in any other part of the British Empire. He can sue for fees, unless he is a Fellow of the Royal College of Physicians, in which case he is prohibited by by-law from recovering at law his expenses, charges, or fees. He can fill public medical appointments. He can sign medical certificates in certain cases, including lunacy (if in practice), death, vaccination, and other statutory certificates. Whilst he remains in practice he is exempt, if he so desires, from serving on juries. It is necessary, however, that his exemption should be claimed when the lists are revised, for if his name is included in the lists he will be liable to serve.

The obligations to the State which devolve upon a registered medical practitioner may be placed under seven headings.

1. *Notification of Births.*

A medical practitioner who is in attendance upon the mother at the time of, or within six hours after, the birth of a child, must give notice in writing of the birth to the medical officer of health of the district, unless he has reasonable grounds for believing that notice has already been duly given by some other person. The practitioner should therefore ascertain whether the father or nurse has given the required notice, and, if not, he should send the notice himself. Too often this precaution is neglected, with the result that, owing to the default of others, the practitioner finds that he is held to have committed an offence, and rendered himself liable to a fine. All births after the twenty-eighth week of gestation must be notified, whether the child was born alive or dead. A stillbirth of less than 28 weeks' gestation need not be notified. No charge can be made for the notification of births.

2. *Death Certification.*

In the case of any person attended during his last illness by a registered medical practitioner, that practitioner must sign and give to some person, required to give information concerning the death, a certificate stating to the best of his knowledge and belief the cause of death. When the practitioner has not actually seen the dead body, and is consequently not in a position to testify as to the fact of death, he should invariably insert the words, "as I am informed" in the certificate. No fee can be charged for furnishing the statutory death certificate, though any additional certificates of death required by the relatives may be charged for. Any death certificate required under the Friendly Societies Act must be a "certified copy" issued by the Registrar of Deaths, and not a duplicate copy of the statutory death certificate signed by the attending practitioner. The statutory death certificate cannot be refused on the ground that the practitioner's account for professional services has not been paid.

3. *Inquests.*

An inquest must be held when "there is reasonable cause to suspect that a person has died either a violent or unnatural death, or has died a sudden death of which the cause is unknown." In any such circumstances the practitioner should refuse to give a certificate and should inform the coroner of the facts. If the practitioner is informed that his presence will be required at the inquest, he should insist upon being served with a subpœna, as otherwise he will not be able to enforce his claim for his fee. No fee is payable to a medical witness at an inquest on the body of a person who died in a public institution, if it was the duty of the medical witness to attend the deceased person as medical officer of the institution. When a medical practitioner has reported a death to the coroner, there is no legal obligation upon the practitioner to give any further information until he is on oath in the witness-box, but as a matter of courtesy it is customary to answer any questions put by the coroner or his officer. No fee can be demanded for information given in such circumstances.

* 44, Hallam-street, London, W. 1. The address of the Registrar of the Branch Council for Scotland is 20, Queen-street, Edinburgh, and that of the Branch Council for Ireland, 35, Dawson-street, Dublin.

4. *Notification of Infectious Disease.*

It is the duty of every medical practitioner attending on or called in to visit a patient, on becoming aware that the patient is suffering from an infectious disease scheduled under the Act, forthwith to send to the medical officer of health for the district a certificate stating the name of the patient, situation of the building, and the infectious disease from which, in the opinion of the medical practitioner, the patient is suffering. Similar notifications must be sent to the Chief Inspector of Factories, Home Office, London, in the case of lead, phosphorous, arsenical or mercurial poisoning, or anthrax, contracted in any factory or workshop. It is customary in urgent cases to notify infectious diseases by telephone so as to secure the earlier removal of the patient to an isolation hospital. In all such cases the written statutory notification should also be made at the earliest moment possible, and neglect of this precaution frequently leads to difficulties.

5. *Evidence in Court.*

A medical practitioner may be required to give evidence in court. Such evidence is privileged to the extent that no civil action will lie against him in respect thereof, but not in the sense that he can refuse to disclose information obtained in his professional relations with his patients. A medical witness who is asked a question which he can only answer by a breach of professional confidence, should appeal to the judge as to whether he is compelled to give the information. If the judge tells him to do so, he must either obey or take the consequences, which may involve a committal for contempt of court. It is conceivable that in some cases a doctor's conscience would not allow him him to give the required evidence. All honour to those who in such circumstances steadfastly refuse to betray a professional confidence. But in many of those cases where privilege is claimed no breach of professional confidence is really involved, as no pledge of secrecy was given or implied.

In criminal cases the amount of the fees to be paid to professional witnesses is fixed by regulations made by the Home Secretary in 1904, modified to the extent of a 50 per cent. increase by the Witnesses' Allowances Order of March 1st, 1920. In civil cases in the High Court the fees allowed vary according to the professional standing of the witness, and in addition he is entitled to his reasonable travelling expenses, but the witness usually arranges with the solicitors as to the amount of his professional fee. The arrangement should be made beforehand, and a written undertaking to pay the agreed amount should be insisted upon. In default of this, it will frequently be found that the solicitors will refer the witness to their clients for his fee, when disappointment may result.

6. *Dangerous Drugs Regulations.*

These regulations impose important obligations on medical practitioners in the matter of keeping specified records of all supplies received, and of all drugs dispensed, which come within the Act. So far as is necessary for the practice of his profession, a duly qualified medical practitioner may be in possession of dangerous drugs. He may supply them by personal administration or by administration under his direct supervision, and he may dispense them for the use of his patients, except that he may not supply raw opium to a patient. A prescription for a dangerous drug:—

(i) Must be in writing and be dated.
(ii) Must be signed with the usual signature of the prescribing doctor.
(iii) Must bear the address of the prescribing doctor (except in the case of prescriptions issued under the National Health Insurance Acts).
(iv) Must state the name and address of the patient.
(v) Must state the total amount of the drug to be supplied on the prescription.

A messenger sent to take delivery of a supply of drugs must be given an authority in writing, signed by the doctor, to receive the drugs on behalf of the doctor. Except in the case of drugs administered by himself personally, a doctor who dispenses or supplies medicines is under obligation to keep the registers of purchases and supplies in the prescribed manner. All registers and other records, and any stocks of drugs held, must at all times be available for inspection by any duly authorised inspector.

Since the introduction of the Dangerous Drugs Act, medical practitioners frequently find some difficulty in deciding the extent to which they can prescribe dangerous drugs for persons addicted to morphia or other drug habits, without rendering themselves liable to have their conduct called in question. It must be assumed that a medical practitioner is entitled to prescribe whatever drugs he conscientiously believes are necessary for the proper treatment of a patient, but when the amount of a dangerous drug which he is disposed to order is in any way excessive, he will be well advised to insist that the amount shall be decided in consultation with a colleague of repute.

7. *Certification in General.*

The quasi-official status accorded to the registered medical practitioner gives him certain privileges in certifying as to his opinion with regard to the physical or mental condition of his own or others' patients. This privilege must be exercised with due care. A medical practitioner may be held liable for injury caused by his neglect to make proper inquiry before signing certificates. A certificate also, if signed maliciously and without reasonable cause, might be held to be a libel upon the person to whom it relates. In the ordinary way the High Court does not accept a medical certificate as evidence, but requires personal testimony from the medical practitioner. A medical certificate must always be regarded as a document of great importance and the practitioner should only certify what he is prepared to affirm on oath.

A HUNDRED YEARS AGO.

From THE LANCET *of Jan. 18th, 1824.*

HOSPITAL REPORTS.

GUY'S HOSPITAL (Jan. 16).

Amputation at the Hip Joint.

This formidable operation was performed here this morning, for the first time, by Sir Astley Cooper in the presence of some of the surgeons and pupils belonging to these institutions . . . the femoral artery, being tightly compressed at the groin by an assistant (Mr. Key), Sir Astley, standing to the outer side, with the limb in the one hand, and the catlin in the other, commenced the operation, by making an incision just below Poupart's ligament, a little to the iliac side of the femoral artery; this was continued obliquely downwards and outwards to the back of the thigh, about one-third of the way down, from which point the knife was carried in the opposite direction, obliquely upwards and inwards to meet the first incision, by this means, forming an elliptical curve; at this step of the operation, the femoral artery was divided, to which a ligature was immediately applied; the cellular membrane was merely cut through at first, but the knife was again carried in the same direction as before, and thus the muscles were also separated; at this step also, it was necessary to apply another ligature on the inside of the limb; here the operator changed positions, and sat on a chair in front of the patient, and waited a short time to see whether there were any bleeding vessels; after the lapse of a few minutes the operation was continued and very shortly completed, the head of the thigh-bone being removed from the acetabulum without any difficulty; two ligatures in addition to those already used were applied, making in the whole four; the integuments were brought together, and a suture applied to the upper portion; strips of adhesive plaster, and lastly a bandage were put over the stump. There were about 12 ounces of blood lost, but it had the appearance of being venous. The limb was removed in the space of twenty minutes, the securing the arteries and dressing occupied fifteen more . . . During the operation the man was extremely faint, but some wine being given him, and fresh air admitted, he recovered. The patient bore the operation with extraordinary fortitude, and after all was finished, he said to Sir Astley, "that it was the hardest day's work he had ever gone through," to which Sir Astley replied, "that it was almost the hardest he ever had."

THE LANCET.

LONDON: SATURDAY, JANUARY 19, 1924.

IMMUNISATION AS A BUSINESS PROPOSITION.

AMERICA is alive to the social value of health. Dr. C. E. FORD, president of the American Association of Industrial Physicians and Surgeons, has recently[1] dwelt on knowledge acquired from industrial investigations; he shows not only how there is a constant ratio between length of employment and physical soundness, but how the sickness rates of the general community and infant mortality are affected by earnings. A sickness rate of 70 per 1000 accompanied a wage of less than $12 per week, but it fell steadily as wages increased until it became only 18·5 for a wage of $20 or more; while an infant mortality of 137·8 went with yearly incomes of $1050, but was only 89·4 for incomes of $1850. The figures are striking, and indicate the enormous importance of real wages to public health and of the study of medical sociology. This country is falling back both in the practice and study of preventive medicine as a money-making concern.

In a well-known American periodical, *Munsey's Magazine*, an advertisement has been appearing regularly in recent numbers. The Metropolitan Life Insurance Company of New York finds it worth while, in the full-page advertisement referred to, to draw attention to the risks of diphtheria and the advantages of immunisation by toxin-antitoxin mixtures. This company, it is stated, "is making every effort to teach mothers that this disease is entirely preventable, and urges them, as well as others in charge of children, to take no chances with diphtheria." Between 1911 and 1922 the death-rate from diphtheria of children insured in the company declined 34·1 per cent. and is still lower in 1923, and it is only reasonable to assume that this improvement is due, in part at least, to an increasing appreciation of the importance of early serum treatment and to the consequent immunisation of very large numbers of children in all the great American cities. In advocating the general application of the Schick test and of the toxin-antitoxin method of prophylaxis the advertisement asserts that "experience shows that both test and treatment are painless and harmless," a claim which will be endorsed, so far as young children are concerned, by those who have employed the method in this country.

It is to be regretted that Great Britain has fallen so far behind the United States in this matter of diphtheria prevention. During the war the medical profession was too over-worked to undertake any investigations which had no direct bearing on that great struggle, and as a result it was not until 1920 that the first account of work done on the Schick test in Great Britain, a paper by Dr. H. MASON LEETE, appeared in these columns. America had a long start and now, after nearly ten years' work, is achieving wonderful results. New York expects to immunise 100,000 children of school age, and 20,000 under school age, in the coming year. Dr. W. H. PARK reports that the death-rate from diphtheria per 100,000 inhabitants has fallen from 22 to 15 in the last four years, and work as extensive and effective has been undertaken in many of the States. To compare with this we have little to show in this country, although Dr. R. A. O'BRIEN and his colleagues have worked energetically at the subject and their published results have doubtless encouraged others to make a trial of prevention methods. Some of the large fever hospitals have taken up the question, and we understand that in those of Aberdeen and Edinburgh all nurses are now protected, the results so far attained having been most encouraging. In both cities, moreover, the departments of child welfare have started immunisation, but much propaganda work will be necessary before parents and directors of institutions see the advisability of imitating America. For their persuasion advertisements of the type of that of the Metropolitan Life Insurance Company might be effective. The company certainly would not advertise unless firmly convinced that it was a paying proposition, and thoughtful parents and guardians, who might be inclined to regard immunisation as a medical fad, are likely to be impressed by such outside testimony. The pioneers of diphtheria prevention in this country, however staunch their patriotism, must regard the enterprise of this and other American insurance companies with envy, and heartily wish that by some process of inoculation or otherwise they could induce our own to copy the methods.

[1] Journal of Industrial Hygiene, December, 1923, v., 279–287.

THE GUINEA-PIG AS INDICATOR.

THE last issue of THE LANCET contained an article, by Dr. E. H. KETTLE, on the Criteria of Cure in Tuberculosis of the Guinea-pig, which is of special importance at the present moment when large numbers of experimental tests of various antigens and chemotherapeutic remedies are being made. Dr. KETTLE wisely points out that guinea-pigs are as a rule experimentally infected purely for diagnostic purposes, and not with the object of studying the whole process of disease in this particular animal. Having obtained what they require—viz., unequivocal evidence of tuberculous infection, most laboratory workers are not further concerned with the trend of events in the animal, any more than a chemist who obtains a precipitate in a test tube is concerned with the physics of the phenomenon of precipitation. But it appears clear that if the guinea-pig is to be used as a test animal for the assessing of anti-tuberculosis remedies, much more precise observation on the march of events in the infected animal is needed.

Dr. KETTLE points out that two false assumptions appear to underlie much of the evidence which is produced in original papers dealing with this matter: (1) That all guinea-pigs react in the same way to the tubercle bacillus, and (2) that fibrosis or healing of local lesions indicates with certainty the cure of the individual. When the evidence is sifted, as it is by Dr. KETTLE, it is obvious that these assumptions are, indeed, erroneous. In the first place the duration of life in the infected guinea-pig varies very considerably and there is every reason why it should. Probably the path of the infection is not always quite the same in each case, since the inoculating needle in penetrating different planes may cause the dose of tubercle bacilli to get past certain superficial glandular lines of defence. This point has recently been brought to notice in a careful piece of work by Prof. S. LYLE CUMMINS,[1] on the infection of guinea-pigs by the conjunctival instillation of tubercle

[1] Tubercle, January, 1924, p. 153.

bacilli. In this article the writer states that the susceptibility of guinea-pigs to the subcutaneous inoculation of tubercle bacilli is too great to allow of the employment of this form of infection in immunity experiments with virulent strains, and suggests per-conjunctival infection as a more precise method of greater delicacy. If subsequent research be found to bear out Prof. CUMMINS's observations, it may provide us with at least one possible explanation why subcutaneously infected animals survive for different periods of time even when other factors have, as far as possible, been standardised. Secondary infection is also a possibility which, in our opinion, is not sufficiently allowed for. It is not uncommon to find a tuberculous guinea-pig dying several weeks before its time, whilst the tuberculous lesions are still slight, from what is obviously a secondary infection. Recently an accidental filter-passing infection invalidated a series of experiments on lymphadenoma in rabbits.[2] Again, it is not unlikely that differences in the dietary obtaining in different laboratories at different times of the year, and with varying methods of feeding, may have a bearing on the matter, for it is clear that we are not yet at the end of our troubles with regard to vitamins and infective disease. And yet another possibility must be considered—viz., the hereditary factor in the strain of the animal used. This point appears to have been largely neglected in this country, but a brief reference[3] to it at the eighth annual congress of the National Association for the Prevention of Tuberculosis by Dr. PAUL A. LEWIS, of Philadelphia, who has investigated the question in collaboration with the United States Department of Agriculture, would suggest that the breed is not without influence in regard to susceptibility to infection.

Nor can the weight of the guinea-pig be regarded as an adequate test without further control. Young animals will continue to grow for some time after inoculation with *B. tuberculosis*, and it is not unknown to find such animals heavier at death than at the time of inoculation. For an obvious reason, also, female guinea-pigs should never be used for such experiments, since pregnancy is difficult to diagnose. Individual guinea-pigs differ in their histological response to infection with tubercle bacilli. Palpable glands may diminish in size even in untreated animals, and fibrosis and natural healing may occur in guinea-pigs infected with tubercle bacilli without any form of treatment at all. And finally we have to reckon with the fact that, so far, no one has succeeded in estimating the toxicity of different strains of tubercle bacilli, and that different laboratories are in the habit of using different strains cultivated on media of varying composition. Thus we realise how thorny a path the investigator has chosen who sets out to test an anti-tuberculosis remedy on the guinea-pig. The proposition may be by no means impossible, but there is need of a far more careful standardisation of the conditions of the experiments.

THE LIMITS OF A SURGEON'S LIABILITY.

A SOUTH AFRICAN correspondent referred recently[1] to an action brought by a Miss VAN WYK against Dr. H. LEWIS on the ground of alleged negligence in leaving in her body a swab, after operating on her for certain diseased conditions of gall-bladder. The case was tried at Queenstown by Mr. Justice VAN DER RIET, evidently with great care, and the principal reasons which led him to give judgment in favour of Dr. LEWIS are worth recapitulating. It may first, however, be stated that the fact of the swab having been left in the patient's body by the surgeon when he closed the wound was disputed. The patient's story supported by witnesses was that the wound had discharged and it had otherwise caused her suffering during the year that followed the operation, and that the swab had appeared in a stool passed at her home on Feb. 15th, 1923, the operation having been performed on Feb. 3rd, 1922. After this period of time the defendant and his witnesses, not unnaturally, could not recall details of the counting and checking of swabs on the occasion in question, and could only speak as to the routine usually adopted at the Frontier Hospital, Queenstown, and admit that the checking was done by the theatre sister present, when the patient's condition had rendered urgent the completion of the operation. The defendant and medical witnesses on his behalf were not able to say that the manner in which the swab was stated to have come to light was impossible, but only that it was improbable, and that its appearance did not bear out the plaintiff's story. The theatre sister, however, gave positive evidence that the swab produced was not one that she had ever used, as it was different in size and other respects from those made by her. As to this important point, however, the judge was sufficiently impressed by the manner of the plaintiff in the witness-box, to hold that her story was true and that the theatre sister must be mistaken. His judgment therefore was based upon the fact, found by him as a preliminary, that a swab had been left behind in error, from which it followed that a mistake in checking must have been made by the sister and not discovered by the surgeon, who, as far as he was aware, had removed all the swabs used.

In these circumstances a number of points had next to be considered. In the first place the judge ruled that the leaving behind of a swab was prima facie but not conclusive evidence of negligence. He then had to decide whether a custom or practice had been proved that in operations the theatre sister or other assistant should be responsible for checking the removal of anything under her charge that should be removed before closing the wound. As to this, he held that such an alleged custom need not be shown to be universal. A surgeon charged with negligence was only bound to establish that he employed reasonable skill and care, and from this it followed that if he adopted a system recognised and used by skilful and careful surgeons, which he reasonably considered satisfactory from his experience, it was not necessary to show that it was the most perfect system or one approved by universal practice. As to what had actually taken place the judge was satisfied that, when the operation had been brought to a conclusion after the anæsthetist had called attention to the patient's condition, "the defendant, as far as the exigencies of the case would allow, had made a careful search and was undoubtedly under the impression that he had removed all the swabs." It had been contended that the surgeon had neglected his duty to the plaintiff in not counting or supervising personally the counting of the swabs before, during, or after the operation. After hearing the opinions of many witnesses, he declined to accede to this view, and attached weight to the opinion that to do as was suggested might distract the attention of the surgeon to the patient's detriment. It had been argued that if not personally responsible for the counting, the surgeon was liable for what the sister did, either because she was his "servant" or because he was a "joint tort-feasor" with her. Carefully reviewing their respective positions and duties, he held that in what the sister did she was "a member of a team collaborating with the surgeon"; he would only be liable for her act or omission if it was due to an order or instruction given or omitted by him. He referred in this connexion to the case of Hillyer v. the Governors of St. Bartholomew's Hospital,[2] and to the earlier case of Perionowski v. Freeman[3] decided by Chief

[2] C. C. Twort and H. E. Archer, THE LANCET, 1923, i., 1102.
[3] Tubercle, 1920, ii., 84.
[1] THE LANCET, Jan. 5th, p. 47.
[1] (1909) 2 K. B., p. 820.
[2] 4 F. and F., p. 977.

Justice COCKBURN in 1866, as well as to "Beven on Negligence."[4] The defendant and the sister could not be held to be joint tort-feasors, as they could not in any way be said to have been jointly engaged in any wrongful act.

It will be seen from the above summary that the case, like others of its character, offered many difficult points for consideration, and Dr. LEWIS is to be congratulated upon having successfully defended himself against a serious charge of negligence, arising out of an accident such as only occurs because, in the words of Judge VAN DER RIET, "no system has yet been devised by which the element of human fallibility can be eliminated." He was also perhaps fortunate in that his case was tried by a judge in accordance with the law and with good sense, and that the element of sympathy that sometimes affects the verdict of a jury and makes for injustice was thus eliminated. As it was, a bitter attack on the conclusion arrived at is quoted from a Bloemfontein newspaper in the *South African Medical Record*, and answered with the vigour it deserves by our contemporary. It includes the statement that "the fact that a medical practitioner cannot be held legally responsible for such an occurrence will be read with amazement by common people." This, of course, is untrue, for the judge expressly laid down in his judgment, quoting from "Beven on Negligence," that leaving a sponge or an instrument in a patient after an operation is prima facie negligence, but that the fact that it is so left is not conclusive. "The conclusion from the fact must be determined by a jury on a view of the whole circumstances." The public, from which juries are drawn, should realise that in the thousands of operations which take place annually the most anxious care is exercised by the surgeon, and by those who assist him, to prevent any occurrence such as Judge VAN DER RIET found took place in the case before him.

THE PSYCHOLOGY OF ÉMILE COUÉ.

DURING his visits to this country Mr. Coué found both admirers and scoffers but few hostile critics. In the current *English Review* an American writer, Dr. Emil Axel Gibson, makes a vigorous attack upon his methods and, pointing out their connexion with hypnotism, sketches their dangers with a heavy pencil. To Dr. Gibson the "will" of the hypnotist is an entity that can enter the mind of another and do strange things therein, while by the power of his will the mental healer can play upon the moral, mental, and physiological consciousness of his subject, as an electrician, by connecting his wires with the batteries of his system, can light every lamp or sound every bell within the ramifications of the connecting lines. A hint of mysterious power lies in the information that in cataleptic disorders "an association with outside mental control over the freedom of will cannot be doubted." This points to bewitchery and prepares us for the conclusion that "the situation is grave enough to call for a warning against practices which may lead to the greatest tragedy that can happen to human nature—the collapse of individuality and the debasement of will." But the danger is not so great as Dr. Gibson fears. Medical psychologists show no signs of being perturbed by the popularity of Mr. Coué, an enthusiast whose charming and paternal manner arouses in his subjects a feeling of delightful dependence that enables them to put aside their neurotic troubles. Perhaps his cures are neither complete nor lasting, but neither he nor any other mental healer possesses the malign powers ascribed to him by Dr. Gibson.

[4] Third edition, p. 1161.

WE regret to announce the death, at Exeter, on Jan. 11th, of Mr. Arthur Charles Roper, oculist and hon. consulting surgeon to the Royal Devon and Exeter Hospital. He was in his sixty-sixth year.

Annotations.

"Ne quid nimis."

THE GENESIS OF GALL-STONES.

PATHOLOGISTS to whom text-book orthodoxy is anathema will read with much interest a paper on the genesis of gall-stones, published in German, by Prof. T. Rovsing, of Copenhagen, in *Acta Chirurgica Scandinavica* (Vol. LVI., Fasc. 2 and 3, pp. 103 and 207). For the past 30 years he has been systematically collecting material wherewith to refute the teaching of Naunyn and others that a gall-bladder must be infected before stones can develop in it. In this period 530 cases of gall-stones were operated on, and in every case a bacteriological examination was made under aseptic precautions at the time of operation. In some cases the bacteriological examination of the contents of the gall-bladder was supplemented by a microscopic examination of a section of its walls and by a bacteriological examination of the interior of the gall-stones. It was found that the contents of the gall-bladder were sterile in 314 cases and infected in 216. In no case in which the bile was sterile could germs be found within the gall-stones, and in only one of the 530 cases was it impossible to demonstrate a core of pigment in the stones. The youngest patient was a child, barely one and a half years old. In this case the bile was sterile, and the common bile-duct was obstructed by a quantity of coal-black grit. There was no sign of any inflammatory reaction, and Prof. Rovsing suggests that this early case gives a valuable clue to the genesis of all gall-stones.

As a result of this prolonged study Prof. Rovsing is inclined to believe that gall-stones all begin as a small nucleus of pigment which forms the core of the stone. Sepsis is, in his opinion, a sequel, not a cause, and he dismisses as untenable the ingenious suggestion that an infected gall-bladder may become sterile after the development of a stone, the germs supposed to be responsible for this development slipping unobtrusively away after the mischief was done. His argument in opposition to this teaching hinges on an analogy. In no case of calculus of the bladder with infection of the urine has sterility been achieved without removal of the calculus. It is, therefore, improbable that a septic gall-bladder should automatically become sterile so long as it harbours a gall-stone. Sepsis should therefore be regarded as a sequel—a very serious sequel—to the development of gall-stones, and not as a cause thereof. Prof. Rovsing ridicules the notion that facets are produced on gall-stones by their pressing on each other under the spasmodic clutch of the gall-bladder. Facets, he suggests, are the expression of the intrinsic properties of the constituents of certain gall-stones, and he notes that in the urinary bladder the oxalate stone is spherical, while the urate stone is a flat oval. He has also noticed that when gall-stones are multiple, they are usually of the same size, and that it is very rare for more than two or three different sizes to be found in the same bladder even when it contains many hundred stones. This observation suggests that all the stones of the same size found in a gall-bladder were formed at the same time, and Prof. Rovsing believes that the period during which a crop of gall-stones is created must be quite short. He suggests that the core of a gall-stone is always, or nearly always, formed in the intra-hepatic biliary passages by the precipitation of black pigment chalk, the process being determined by a transitory "diathesis" comparable with the periodic precipitation of uric acid, uric acid salts, and calcium oxalate in the kidneys.

Two other observations deserve special mention. It has been suggested that ptosis of the viscera, notably the liver and stomach, favours the development of gall-stones by obstructing the biliary passages. Among the 300 cases operated on for gastro-coloptosis by Prof. Rovsing during the past

25 years, there were only eight in which gall-stones were found at the time of operation. Further, among the 530 patients operated on for gall-stones, there were only 18 women and one man suffering from gastro-coloptosis. The poor state of general nutrition of ptotic patients may give a clue to their comparative immunity from gall-stones, which are most common in fat persons. The other observation is also instructive. Among 30 cases of chronic biliary obstruction and jaundice coming to operation, and 32 coming to necropsy, there was not one showing the slightest evidence of gall-stones, whether the chronic jaundice was associated with sepsis or not. In other words, prolonged biliary stasis with jaundice does not evidently promote the development of gall-stones.

LEPROSY IN PARIS.

THE danger of leprosy spreading in Paris is by no means negligible at the present time, for at least 200 lepers have drifted there from foreign countries. Prof. M. E. Jeanselme recently demonstrated to the Academy of Medicine [1] a case of macular leprosy in a young man of 16 years who had contracted the disease in Paris. The patient was born in that city, where he had resided all his life. His father, an ex-marine, had served abroad in Guiana and Cochin China, and in 1913 developed leprosy—that is, eight years after his return from abroad. The mother of the leprous youth remains perfectly healthy. There can be no question in this case of hereditary transmission of the disease, for at the time of the birth of his son the father was perfectly healthy; on the other hand, it is probable that the disease was transmitted from father to son by actual intimate contact. The author points out that in the Hospital Saint Louis, where lepers have been segregated in one room for very many years, no case of contact infection has so far been recorded, but here is an infection contracted in the family circle in a spot far removed from any endemic focus of the disease. Unfortunately this is by no means a unique case of contact infection by leprosy in Paris; at least three similar cases have been recorded since 1885. In view of this evidence, Jeanselme urges the Permanent Leprosy Commission to study anew the prophylactic measures to prevent the spread of leprosy in France.

THE NERVOUS COMPLICATIONS OF PARATYPHOID FEVER.

ACCORDING to Dr. G. Artom,[1] assistant at the Clinic of Nervous and Mental Diseases of Rome, who records an illustrative case, nervous complications apart from meningeal involvement are uncommon in paratyphoid fever. Schottmüller reported a case of epileptiform attacks in a girl, aged 20, who had not previously suffered from epilepsy, but was of an irritable and eccentric disposition. Cases of tetany have been recorded by Bedos, Babonneix, Corone, Bossert, and Vincent and Muratet. Examples of hemiplegia have been related by Cestan, Descomps, Euzière, and Sacage who attribute it to cerebral arteritis. Schürer has described a case of dysarthria, which he attributed to hæmorrhagic inflammation of the bulbar nuclei, and Etienne has reported a case of permanent spastic paraplegia. Bingel has published a case of spastic paresis of the limbs without involvement of the facial nerve, and regarded the condition as due to acute encephalitis, and Goston and Schett have related a case of cerebral abscess in paratyphoid B infection. Dr. Artom's case was in a neuropathic female infant, aged 13 months, who developed paratyphoid B fever, accompanied by psychical disturbance in the form of alternate drowsiness and restlessness. The restlessness disappeared, but the drowsiness became more pronounced, and severe nervous symptoms developed in the form of conjugate deviation of the head and eyes to the right, slight nuchal rigidity, and generalised clonic movements. Lumbar puncture gave issue to an abundant clear fluid containing a slight excess of albumin and lymphocytes, with a few polymorphonuclear cells. The clonic movements and nuchal rigidity disappeared in a few days, and spastic left hemiplegia developed. This condition lasted until the temperature became normal on the twenty-ninth day of disease when rapid improvement began, and in another fortnight complete recovery took place. The symptoms in this case were probably due to a toxic impregnation of the cerebral cells and meninges, possibly accompanied by slight vascular infiltration and œdema. Severe vascular lesions, such as arteritis, thrombosis, or hæmorrhage, were excluded by Dr. Artoun, as they could not have cleared up so quickly.

[1] Bull. de l'Acad de Méd., 1923, xc., 395–397.
[1] La Pediatria, 1923, xxxi., 545.

FOOD AND DISEASE IN THE TROPICS.

DURING his long service in the Navy Sir P. W. Bassett-Smith had constantly to deal with the practical application of dietetic principles and the fruits of his experience are manifest in an address which has now been reprinted.[1] Just as in civil life the ultimate result of a deficient dietary is to produce civil disobedience and political unrest, so, in former times, bad rations fomented open mutiny in the Navy, as in the reign of George III. In the tropics the maintenance of a balance between the intake and output of heat should be the main consideration underlying the dietary, so that the ration supplied to naval ratings in the Persian Gulf has to be based upon a different scale from that supplied in more temperate climes. The value of protein in the dietary should depend largely upon the amount and kind of amino-acids which it contains, two only of which—tryptophane and lysine—appear to be indispensable for life. The greater the similarity of the protein supplied to the tissues, the higher is its value; hence the biological protein value of meat and milk is three to four times as great as that of maize. In the tropics people tend to rely more particularly upon one kind of food—e.g., rice, maize, bananas, manioc, figs, or dates—for the maintenance of life, and this very dependence on one particular product tends to produce, in times of scarcity, malnutrition and susceptibility to disease. The lecturer showed how the dietaries of the several navies when compared showed considerable variations, those of the United States giving the highest caloric value, the French and Japanese showing much lower fat values than those of the British and Americans, more in conformity with tropical conditions. Tropical heat has a depressing action upon many physiological processes, lessening the respiration rate, and with it the absorption of oxygen and the excretion of carbonic acid, resulting in retention within the body of CO_2 with production of glycosuria and acidosis. In addition to the basic supply of protein, fats, carbohydrates, and salts, accessory food substances—the vitamins—or "food hormones" are essential to health. Sir P. W. Bassett-Smith concluded by directing attention to the experiments on guinea-pigs which showed that animals fed on a diet rich in vitamins, such as marmite, exhibited an enhanced resistance to tuberculous infection as compared with a control series fed on a normal dietary.

[1] Presidential address on the Relation of Food to the Causation of Disease in the Tropics, Trans. Roy. Soc. Trop. Med. and Hyg., 1923, xvii., 223–244.

RECURRENT ATTACKS OF INFANTILE PARALYSIS.

THE germ of infantile paralysis is generally supposed to confer immunity to a second attack. Attempts have often been made to reinfect monkeys which have contracted experimental infantile paralysis, but these attempts have always failed. The reason for this failure is probably to be found in the researches of

Levaditi, Flexner, and Lewis, who have demonstrated in the blood of persons recovering from this disease substances capable of neutralising its virus. During the epidemic of 1916 in New York two cases were, however, reported, in which more than one attack occurred in the same patient. In *Le Scalpel* for Nov. 17th, 1923, Dr. Gaston Peremans has recorded a case in which the disease recurred in three successive waves. The patient was a girl aged 4 years and 9 months. On her admission to a children's hospital in Boston, U.S.A., in July, 1920, there was a history of drowsiness and morning vomiting for the past six weeks. The vomiting had become more severe during the past 15 days, and during the last week there had been attacks of convulsions, the first of which had lasted one or two minutes, the second 20 minutes. Since then she had been very weak, groaning when she raised her hands to her head. In hospital she cried when she was touched, the reaction of the pupils was very slow, there was slight cervical rigidity, and Kernig's sign was positive on both sides. The preliminary diagnosis of tuberculous meningitis was unsupported by the evidence of lumbar puncture, and she was discharged from hospital with the diagnosis of anterior poliomyelitis. She was re-admitted to hospital in October, 1920, with the history that for three months she had been well in spite of morning vomiting accompanied by abdominal pain and drowsiness. Eight days before admission to hospital incessant biliary vomiting began, and she complained of pain in the left lumbar region and the right half of the head. Four days later she could not move her limbs, and she screamed when her head was touched. Passive movements of the legs were painful, and the left leg showed a flaccid paralysis. The left arm was weak, and the movements of the left side of the chest were less ample than those of the right side. Pirquet's reaction was negative, and no tubercle bacilli could be found in the cerebro-spinal fluid. About two years later a third attack occurred, being characterised by anorexia, vomiting, and pain. It was less severe than the previous attacks, and on this occasion areas which had been almost intact were involved. The arms were painful, and the wrists assumed a position of permanent flexion. Slight atrophy of the dorsal muscles of the hands developed. Re-examination of the cerebro-spinal fluid failed to show any sign of a tumour of the cord. Dr. Peremans suggests that the immunity conferred by the first attack must have been so transitory that reinfection occurred.

BLOOD URIC ACID IN SKIN DISEASES.

AT the last meeting of the American Dermatological Association Dr. Jay Frank Schamberg, director, and Mr. Herman Brown,[1] chemist of the Research Institute of Cutaneous Medicine, Philadelphia, read a paper on the blood uric acid in diseases of the skin with particular reference to eczema and pruritus, based on the analysis of the blood of 280 persons. They remark that there has been a tendency on the part of American writers on dermatology to pay little or no attention to the relationship of gout and eczema, which has always been emphasised by French dermatologists and to some extent by specialists in this country, especially Tilbury Fox. Although there is no unanimity at present as to what constitutes the maximum normal for uric acid in the blood, the writers are of opinion that it is about 3·7 mg. per 100 c.cm. of blood, estimated by which standard 44 per cent. of their 161 cases of eczema and 50 per cent. of 10 cases of pruritus showed an excess of uric acid in the blood. The type of eczema in the main associated with excess of blood uric acid was the erythematous form, although the vesicular and other types were represented. On the other hand, in psoriasis, urticaria, acne rosacea, acne, and other cutaneous diseases the percentage of cases of hyper-uricacidæmia was strikingly less than in eczema. Age appeared to exercise a considerable influence on the quantity of uric acid in the blood. The highest uric acid values were found between the ages of 40 and 80, and decidedly lower rates were observed between 15 and 40. The rise in uric acid, however, as age advanced, was much more obvious in patients with eczema than among those with non-eczematous dermatoses. The influence of sex was shown by the fact that the average amount of uric acid in the blood was 3·6 per 100 c.cm. among 167 male patients as compared with an average of 2·7 mg. among 140 female patients; among eczematous subjects the average of 95 male patients was 3·9 mg., and of 69 female patients 3 mg. In several cases the writers made a determination of the uric acid in the scales thrown off the skin. While the method was less accurate than the determination of blood uric acid, the results were suggestive. There appeared to be a relationship between the blood content and the scale content, but the amount of uric acid in the scales was higher. Patients with an excess of blood uric acid were placed on a diet from which meat, fish, fowl, internal organs, and meat soup were excluded. Eggs and milk were allowed, as they yielded no purin products. On the whole, the results were very gratifying, though in some instances dietetic treatment was disappointing.

[1] American Journal of Dermatology and Syphilology, December, 1923.

COMBINING RADIUM EMANATIONS WITH FAT.

Prof. J. Strasburger,[1] of Frankfurt, reports the results of experiments to increase the availability of radium emanations by using fat as the vehicle of transport instead of water. He has previously published several articles showing that the effect on the tissues of the body increases with the increase in the quantity of radium emanations introduced, but unfortunately the quantity of radium available is generally too small to allow of the use of such large doses, and therefore he seeks to find a way of increasing the availability of the radium without increasing the dose. Radium emanation is, as is known, a gas, which can be dissolved in water, and which is readily given off from the latter into the air, where it diffuses. Introduced into the body it diffuses through the lung capillaries into the expired air. Chemically the emanation is combined neither inside nor outside the body as "Edelgas." Prof. Strasburger's idea is to make a stronger physical combination with the emanation than has hitherto been done in order to retain it longer in the body, and so make its availability greater. He gives the coefficient of solubility of emanations in air and water (given equal volumes of both, and taking the coefficient of air = 1·0) as water at 20° C. = 0·25; water at 30° C. = 0·20; water at 40° C. = 0·16. Various paraffins and fats dissolve more radium—e.g., vaseline will dissolve nine times as much radium as air, and therefore 36 times as much as water at room temperature, while olive oil dissolves 28 times as much as air or 112 times as much as water. These facts have been made use of by Prof. Strasburger both for external application and for internal administration.

For External Application.—In baths containing emanations it is only the thin layer covering the skin that has any action, for the α rays penetrate only to a depth of 1/10 mm. and the β rays only to a few centimetres. Prof. Strasburger therefore recommended that the action might be strengthened by substituting for the baths packs of emanation water, enveloped in an airtight covering, to prevent the diffusion of the emanations into the air, but even so the emanations very rapidly diffused off. He found that by dissolving the emanations in vaseline and applying it in the form of an ointment to the skin the rate of diffusion into the air was very much diminished. The difference between water and fat solutions when free access to the air is allowed is shown by a graph. The thickness of the enveloping sheet of emanation-containing substance naturally influences the rate of diffusion. Whereas with a thickness of 15 mm. of water 55 per cent. of the emanations are present after 15 minutes, in vaseline of the same thickness 90 per cent. are still present at the end of an hour, and with a thickness of 2 mm. only 20 per cent. are retained in water after the

[1] Deutsche med. Wochenschrift, Nov. 30th, 1923.

first minute, while 38 per cent. remain in vaseline after an hour. If the air is cut off by an airtight covering, the concentration available for therapeutic use is still further increased. A solution of emanations in fat produces in another way a greater therapeutic effect than a solution in water; for while it is true that with water packs or baths the emanations diffuse to a certain extent into the body and are given off in the expired air, this action is very limited, as the water remains on the surface of the skin and only very slightly penetrates into the pores. On the other hand, the ointment penetrates through the sweat pores and hair follicles deeply into the corium, and the epidermic cells themselves take up the fat (as can be demonstrated by the fact that many substances can be found in the urine after applying them to the skin). Therefore even when the layer of ointment is removed from the surface, a certain amount remains behind, and the action of the emanations continues for some hours. One may assume that the emanations reach the nerve-endings, and by virtue of their lipoid solubility may be retained and stored in the nerve sheaths. It is also possible that they may travel (similarly to tetanus toxins) along the sheaths to the central nervous system. In this way Prof. Strasburger explains the effect on trigeminal neuralgia of emanation ointment applied to the face. He has used this application with increasing success in such cases, and finds that the pain is relieved after daily application continued for a few days up to two to three weeks, suggesting that the time taken may be necessary for the emanations to travel up the nerve sheaths to the Gasserian ganglion.

Internal Administration.—If a watery solution of emanations is taken by the mouth the emanations pass into the portal system and into the right ventricle. While passing through the lung capillaries most of the emanations are given off into the alveolar air, and only a very few reach the systemic circulation. If the solution is taken on an empty stomach the expired emanations reach a maximum in a few minutes, then sink, first rapidly, and later more slowly, until in about 50 minutes no more are given off. When taken on a full stomach, the quantity of expired emanations does not reach such a high point, but remains for a longer time at a medium height and only sinks slowly till zero is reached in about two and a half hours.[2] Thus in the first case an intensive action of short duration is present, while in the second a weaker action of longer duration is obtained, and this, in considering the therapeutic effect, is an important point. If the therapeutic value is required not only of the α rays, which come off first, but also of their breakdown products, the β and γ rays, which are found later, then it is clear that it is of the utmost importance to retain the emanations in the body for as long as possible, and in this direction Prof. Strasburger has conducted his experiments. With his co-workers, Dr. Vaternahm[3] and Dr. Möhrle, he has shown that if an olive oil solution is taken internally, the emanations are retained in the body for a longer time than when a watery solution is used. This is true with an empty stomach, and still more so with a full one. With oil taken on a full stomach it is over six hours before the expired air is free from emanations. This phenomenon may be explained as follows: (1) fat leaves the stomach more slowly than water, and therefore absorption from the intestine is delayed; (2) in virtue of their high solubility in fat, the emanations are only slowly given off in the intestines to the surrounding fluid; the rate at which the emanations are absorbed from the intestines depends upon their solubility in the products of fat digestion—namely, fatty acids and soaps; for if their solubility in the latter substances is less than in neutral fats, then a proportion will be set free and will rapidly diffuse into the tissues, while that quantity of emanations which are soluble in fatty acids and soaps will remain dissolved for a time proportionate to the coefficient of solubility for these substances. Experiments are still being carried out to determine this coefficient, but it has already been shown that the coefficient for fatty acid is approximately the same as that for neutral fats, while that for soap is considerably higher than that for water.

All the foregoing facts taken together point to an increase in the absorption time as compared with water. But is the increase in the time of the expiration of the emanations into the air accounted for alone by the increase in the absorption time? The problem of retaining the emanations in the body has been half solved by Prof. Strasburger by increasing their solubility, and he has thus succeeded in retaining them longer during their transit from the mouth to the intestine and during their absorption into the blood, but the next question is more difficult—that is, whether after absorption into the blood, the physical combination with fat has any further effect and can carry them past the lung capillaries (where most is expired) into the systemic circulation in greater quantity than is otherwise the case, for it is only those emanations that have passed through the lungs that reach the joints, muscles, nerves, connective tissue, &c.—in short, those places where their healing powers are needed. The answer to this question can be approached in several ways. We can follow in imagination the emanations, dissolved in oil, passing from the intestine into the thoracic duct and so into the venous blood-stream, the quantity of the blood depending on the fat content of the latter, and consequently increasing after a meal, more especially if such be rich in fats. The emanations then pass through the capillaries of the lungs, where most is given off into the alveolar air—but not all. That this is so is demonstrated by experimental estimation of the total quantity of emanations given off in the expired air. Such estimations have been carried out, and Prof. Strasburger has also, in order to eliminate any loss of emanations during their passage from the mouth to the intestine, introduced them direct into the duodenum. The result of these experiments shows that of 3000 M.E. (Maché units) in water, 69 per cent. are recoverable in the expired air, while from the same quantity dissolved in 20 c.cm. olive oil 56 per cent. are expired. Thus the quantity retained in the body and otherwise transformed or excreted is 31 per cent. and 44 per cent. respectively.

Further experiments consisted in injecting a fine emulsion of emanation-containing oil into a vein and measuring the expired emanations. A graph shows the quantity expired during the first minute, using water and varying quantities of oil, and indicates that the greater the quantity of fat introduced the less the amount of emanations expired. Experiments with much larger quantities of oil up to 250 c.cm. are still in progress. The last link to be discovered is the quantity of emanations present in the arterial blood, and investigations on this point are being undertaken. The conclusions that Prof. Strasburger draws from his work are: that it is possible to bring a larger quantity of radium into action, not only by increasing the dose, but by increasing the availability of the emanations; and that this object is attained by taking advantage of the fact that emanations are more soluble in fat than in water.

[2] Keman and Neumann: Zeitsch. für Baln., 1910–1911, No. 17; Strasburger: M. w. W., 1911, No. 15; B. kl. W., 1912, No. 9. [3] Zeitschr. f. physik. diät. Ther., 1922, xxvi., 261.

WORKMEN'S COMPENSATION IN 1922.

REMARKABLE figures as to miners' nystagmus are a feature of the Home Office statistics [1] of compensation and proceedings under the Workmen's Compensation Act of 1906, and the Employers' Liability Act, 1880, for the year 1922, just issued. In the figures of industrial diseases, cases of miners' nystagmus amount to 68 per cent. of the total number. This disease was first scheduled in May, 1907, under Section 8 of the 1906 Act. Figures for the years from 1908 to 1922 are now available. In 1908 386 new cases were recorded. The total climbed over the 1000 mark in 1911, and passed the 2000 mark in 1913. In 1914 there were 2775 new cases; in 1919 and 1920 this figure was but slightly varied. The three months' stoppage in the mining industry in 1921 may have been a reason why the total of new cases sank to under 2000 in that year. In 1922, however, the figure has made a startling jump up to 4092.

Other points of general interest in the report are the statistics illustrating the increasing recourse to the services of medical referees. There is power under Article 15 of Schedule II. of the 1906 Act for committees, arbitrators, and judges to refer cases to medical referees. In 1922 208 cases were thus referred in England, and 80 in Scotland. Under Article 5 of the same schedule (which has since been altered by the 1923 Act) a county court judge can summon a medical referee to sit with him as assessor. This was done in 465 cases in 1922. Under Article 15 of Schedule I. recourse is had to medical referees (by

[1] Cmd. 2007. H.M. Stationery Office. 1923. 6d.

agreement between the parties) for certificates of the condition of the workman and of his fitness for employment, or for decision whether and how far his incapacity is due to the accident. This was done in 1224 cases in 1922 as against 655 cases in 1921. Finally, under Section 8 (1) (*f*) of the 1906 Act there is an appeal to medical referees against the decision of a certifying or other surgeon in giving or withholding a certificate of disablement on account of industrial disease. There were 1049 such appeals in 1922 as against only 479 in the previous year. It is perhaps worth noting that in as many as 387 out of the 1049 appeals the surgeon's decision seems to have been overruled. The annual statistics relating to medical referees will be affected in future years by the new provisions of the 1923 Act and by the various new regulations made on Dec. 17th of last year.

Two other matters of interest are the decrease in litigation under the Acts and the slight increase in the proportion between payment of compensation and cost of insurance. As is well known, there are many who advocate as a political measure the handing over to the State of all insurance against workmen's compensation and employers' liability. They point, on the one hand, to the low figure of administrative cost in countries where the State has undertaken the monopoly of its own insurance system. On the other hand, they show that where such insurance is left to private enterprise, the insurance companies have to spend (in competition with one another) so much money on offices, advertising, canvassers, and so on, that a considerable sum is wasted upon overhead costs which might otherwise be given to increased benefits. The position in 1922 shows some improvement here. In 1921 the proportion of income allocated to payment of compensation by insurance companies was only 35·95 per cent. In 1922 it was 44·46. In future years the proportion will be higher still, the big accident insurance companies having entered into a self-denying arrangement with the Home Office that the figure shall be not less than 60 per cent. in future, with the possibility of still further improvement.

A HEALTH SURVEY OF A CHICAGO PRISON.

THE American system of health surveys is proving its utility, throwing rays of light into many a dark corner. The Chicago Bridewell would seem, from a report [1] of one of these health surveys, to be a dark corner indeed. The survey was initiated by the Municipal Tuberculosis Sanitarium. Altogether 1181 inmates were examined, 784 being stripped and exhaustively examined for non-tuberculous as well as tuberculous conditions. The ratio of whites to blacks was as 70 to 30, and 136, or 11·5 per cent. of the total, were found to be tuberculous. In 79 other cases there were uncertain signs of tuberculosis, and only 966, or 81·9 per cent., could be regarded as non-tuberculous. Dental caries was found in 675 cases, and pyorrhœa in 400. The examining physicians reported that the mouth condition in this class was the worst they had ever seen. The great majority of the prisoners had from two to eight old rotting stumps, often associated with pyorrhœa and inflamed or ulcerated gums. Obviously the dental service at this institution was inadequate, and it is urged by the examiners that the opportunities neglected in this prison must sooner or later be paid for by a large crop of destitute invalids suffering from chronic rheumatism and heart disease for which the community must pay for an indefinite period. "It is cheaper," they remark, "to pay one full-time dentist now than to support hundreds of incurables a few years from now." Five hundred of the prisoners suffered from chronic pharyngitis, and 20 from hernia. The most representative criminal in this prison was the petty thief or pickpocket, whose small, under-nourished, anæmic frame obviously rendered him incapable of doing a day's physical work even had his cravings pointed in that direction. "It seems probable that an individual of this type is, in many instances, a pickpocket from necessity rather from choice. . . . He must thieve or he must starve." The report on the general hygiene of the prison is a damning indictment. "They are not taught hygiene, and they do not live hygiene. They are locked in their cells at 4.30 in the afternoon and remain locked up till 6 or 7 next morning. Of the 1600 inmates, 1000 live in cells, often two to a cell, in which there are no toilet facilities. Two-gallon cans without covers are supplied in lieu of toilets. The physical discomfort and moral degradation of this arrangement, even to those whose sense of common decency is far from keen, may well be imagined. It is only fair to state that the superintendent of the institution has tried for years to secure better health conditions at the Bridewell, but without avail." There is much more to the same effect in this stinging indictment of a state of affairs which carries us back to the barbarism of the Middle Ages. Incidentally this report shows how difficult it may be to carry reforms from within, however anxiously the officials of certain institutions desire them.

[1] Bulletin, City of Chicago Municipal Sanitarium, Nov. 1923.

BLOOD GROUPS AND OPSONINS.

THE excessive number of variables which come into play in the opsonic technique has, for a majority of workers, proved a fatal obstacle to the gathering of useful information from the determination of opsonic indices. In a short paper, which we publish in our present issue, Dr. F. C. Martley has drawn attention to yet another complicating influence. He has found that under similar conditions, in the case of an individual belonging to blood group ii., the corpuscles appear to be more active in phagocyting tubercle bacilli than those of individuals of two of the other blood groups —viz., iv. and iii. Making a larger series of experiments with a number of individuals, he finds that an increased phagocytic ability is apparently inherent in the leucocytes of persons belonging to group ii. These observations are interesting and worthy of a more extended investigation. It also appears to us that, from his initial experiment, Dr. Martley might equally reasonably argue that with the same corpuscles a group ii. serum seems to be more active in exciting phagocytosis than that of the other groups, and that the serum factor is deserving of investigation as well as the corpuscular one; in this respect the influence of agglut nation may come in. It might be expected that where corpuscles are in the presence of a serum which contains iso-agglutinins for the group to which they belong, that marked differences of opsonic power would be noticed relative to what occurs between homologous serum and corpuscles from surface alteration of the corpuscles, but in the single experiment in which one can search for evidence upon this point we find no such variation. The investigation is an interesting one, and points out an as yet unconsidered factor to be reckoned with in opsonic determinations.

THE PRACTICE OF MEDICAL GYMNASTICS.

Two addresses recently delivered to the Chartered Society of Massage and Medical Gymnastics emphasise the intimate relation in which this branch of practice stands to medicine. Dr. J. B. Mennell's lecture appears substantially in full on another page; the time now seems remote when, as he reminds us, a deputation of his fellow house officers waited upon him to request him not to degrade his profession by studying such a doubtful branch of medical practice. During the 15 years which have elapsed since then, Dr. Mennell has learnt many things, to do and not to do: among them, that it is far easier to rub a disability into a patient's mind than it is to rub it out of his limb; and, on the other hand, that in every joint, with the solitary exception of the hip-joint, it is possible for the gymnast to perform some movement not ordinarily under the patient's voluntary control. Sir William Milligan's "Founders" Lecture,

delivered last Monday to the Society, opened with an interesting historical summary of medical rubbing from the earliest times. He recalled the aphorism of Hippocrates that "soft rubbing loosens; much rubbing causes parts to waste; moderate rubbing makes them grow." The competent masseur of to-day is not only a trained manipulator and rubber, but has become also a physico-therapist and to some extent a psycho-therapist, with the art of imparting hope and encouragement to his patients. So long as the present excellent and comprehensive training is insisted upon and so long as no extravagant claims are made, Sir William Milligan regards as certain the medical gymnast's hold on the respect of the medical profession and the gratitude of the public. In orthopædic surgery the best end-results can hardly be obtained without recourse to mechano-therapy; effleurage is now begun almost at once in the case of that very common injury, a sprained ankle; massage soothes in some degree the dreadful paroxysms of pain in tic douloureux. Turning to his special department, Sir William Milligan laid stress on the need for instituting massage in middle-ear disease the moment facial paralysis or weakness becomes apparent, for the facial musculature is peculiarly prone to rapid degenerative change; in the condition known as boxer's or footballer's ear, immediate massage may avoid the deformity, so likely otherwise to be permanent. In building up the muscle tonus in general, the masseur is thereby increasing the effort and endurance of the heart itself. Without thorough grounding in anatomy and physiology, however, he can hardly set out to correct the many postural defects which are the result of faulty bodily mechanics. In conclusion, Sir William Milligan emphasised again the long and careful preliminary training required for proper appreciation of the therapeutic value of massage and physical exercises.

DR. ALBERT ABRAMS.

THE death is announced from San Francisco of Dr. Abrams, whose name was in recent years associated with so-called electrotonic reactions. He was born there in 1863, graduated in medicine at Heidelberg in 1882, and after further study in London, Berlin, Vienna, and Paris returned to San Francisco, where he became professor of pathology at the Cooper Medical College and in 1904 president of the Emanuel Polyclinic. At this period of his life Dr. Abrams was a prolific writer on clinical topics, his published works including a Manual of Clinical Diagnosis (1894), Transactions of the Antiseptic Club (1896), Nervous Breakdown (1901), and Spinal Therapeutics (1909). He then took up the subject of spondylotherapy, and presided over an association for its study. His electro-tonic work developed into an elaborate system of diagnosis and treatment which was considered by scientific medicine to be devoid of any basis, and on this point considerable evidence is now forthcoming. A correspondent of THE LANCET, recently travelling in the United States, has prepared a report for our columns, which will appear shortly. The necessity for publication is felt particularly by medical men in the United States, where the theories of Dr. Abrams appear to have obtained some hold, largely owing to the credulity of prominent laymen.

WE learn that Dr. D. E. Derry, professor of anatomy at the Government Medical School in Cairo and a well-known anthropologist, has been charged with the examination of the mummy of Tut-Ankh-Amen, and that Sir Archibald Reid's coöperation will be available for the X ray technique. Calcified ova of bilharzia have before now been found in mummified kidneys, and calcification of the arteries seems to have been one of the commonest of diseases in the time of the Pharaohs, affecting both young and old. What else the examination may reveal is a matter for intelligent speculation, but nothing is likely to miss the combined efforts of anatomist, anthropologist, and radiologist.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

LIV.—TREATMENT OF THE ACUTE MENTAL CASE.[1]

ACUTE DEPRESSION AND ACUTE EXCITEMENT.

Acute Depression.

A CONSIDERABLE degree of depression may have existed unrecognised or misdiagnosed before the acute phase of the condition makes the diagnosis of "melancholia" clear. The management of a case of melancholia is a very large and sometimes a complicated question, but the immediate home treatment, which is largely symptomatic, is clear enough in certain important respects, and must be instituted without delay. By far the most important point is the fact that probably all acutely depressed patients have suicidal impulses at one time or another during the illness, and many have them constantly. There is only one safe rule in this matter: *Never* allow the patient to be out of the sight and immediate care of some responsible person. Neglect of this rule will sooner or later result in that greatest of tragedies, the needless death of a recoverable case. Inasmuch as the majority of suicides occur in apparently convalescent cases, the practitioner will be well advised never to relax this precaution, which should be taken the moment melancholia is suspected, without obtaining a second opinion. Commonsense measures, such as having the patient's rooms on the ground floor, removing sharp knives, knitting-needles, door keys and the like will suggest themselves and are important. Many a patient has committed suicide at leisure behind the locked door of a bathroom or water-closet, the attendant having acceded to the patient's plausibly expressed desire for privacy. A discussion of the question of suicide with the patient is perfectly good practice, and is often of great help in making the position clear. The view that, by doing this, one "puts the idea into the patient's head" is entirely fallacious.

Finally, it may be said that the vast majority of melancholics are honest with their physician and themselves, in the sense that when they say definitely and unequivocally that they are now well and have no intention of attempting suicide, they are to be believed. A convalescent patient who only goes the length of saying he thinks he ought to be all right now, or words to that effect, should in general be regarded as still very far from well. Next to the preventing of suicide, the cardinal points in the treatment of acute depression are: rest in bed (in the open air if possible), attention to the gastro-intestinal tract, which is invariably disordered, treatment of the sleeplessness, which is a constant feature, and relief of the patient's bodily restlessness and mental suffering. Physical improvement precedes mental, and the variations in body-weight make an excellent index of progress.

Opium has long been recommended as the best physical and mental calmative, and Battley's solution is a favourite form for its administration, but it is doubtful if it has any great effect in most cases, unless pushed to unwisely large narcotising doses. Calcium salts have been much tried and praised of late years, and some believe that very small doses of sulphonal (5 gr. twice daily) are of use in taking the edge off acute depression. The results are usually disappointing whatever drug is used. For actual sleeplessness, paraldehyde is best and may be given in doses of from 2 to 4 drachms the very last thing at night. As its effects are apt to wear off in the early morning, in a really sleepless case it may advantageously be given along with some drug which is

[1] An article on the treatment of Acute Delirium appeared in the last issue of THE LANCET.

slower but more sustained in its action. Seven to ten grain doses of veronal are much used for this purpose. Constipation is usually most troublesome to combat, and refusal of food as the result of various delusions, or as an attempt at suicide by starvation is unfortunately only too common. Even commoner is a process of slow starvation due to the patient eating something, but not nearly enough, at every meal. Tube feeding must be resorted to without undue delay, and the patient rarely raises any great objection.

Reassurance rather than argument is the keynote of correct dealing with the patient's mental distress. His fears and delusions did not arise out of, nor will they be removed by, any process of logic. While occupation and interest are the patient's great mental needs, yet the process of "rousing" and "cheering him up" is often much overdone. Inability to respond to emotional stimuli is of the very essence of the patient's illness. For this reason, too, unwillingness to "add to the patient's depression" by telling him, for example, any bad family news during his illness is needless. Such news will upset him less than at any other time.

Acute Excitement.

Severe but manageable excitement is commoner than an outburst of really acute "raving" mania. The condition is marked by emotional exaltation and rapid flow of ideas with greatly increased activity of body and mind. The more acute the excitement the more obvious is the impaired power of attention and the lack of control. In a really acute case the flow of ideas is so unchecked, and the power of attention and control so completely removed that the patient is completely incoherent and incapable of any continuity of thought or fixity of purpose. For this very reason, however, many such cases are, if anything, less troublesome to treat than those not quite so ill, who retain sufficient directive power to attempt to give effect to their unsound judgments and mistaken ideas. Maniacal patients are highly distractible and the ease with which their thoughts, speech, and actions can temporarily be diverted from one channel to another by a tactful and ready-witted companion is an important factor in treatment. Even the mildest cases, however, tend to remain noisy, interfering, argumentative and obstreperous, and are a source of great trouble whether at home or in a mental hospital.

The commonest error in the everyday management of such patients is an undue "humouring" of them by those who have to do with them. To show timidity in the presence of such a patient or to assent to his most outrageous statements with a would-be soothing, but obviously artificial "yes, yes," is apt merely to increase his emotional exaltation and aggravate his condition. Far better results are obtained by a tactful appeal to the patient's boisterous enthusiasm, his sportsmanship, his sense of fair play, and so on. Only in the most acute cases will such measures altogether fail. Many physicians, unfortunately, have at one time or another had to adopt similar measures with persons in certain stages of alcoholic intoxication, and indeed the resemblance, from this point of view, between the two states is very considerable. In many cases the excitement is far more evident in speech than in action, and vice versa, and in dealing with the patient advantage can often be taken of this fact. Many a patient in considerable excitement will remain comparatively quiet in a room, or even in bed, if he is provided with an ample supply of writing materials with which to produce innumerable letters and drawings. Others again will be perfectly quiet if given opportunity to walk vigorously about the garden, while others will sit motionless in bed talking incessantly. A case of any real severity should be kept in bed, if at all possible, though this is often a very difficult task, and it may sometimes, as indicated above, be wiser to allow the patient to be up. The patient's impaired power of attention makes it impossible for him to give due regard to his clothing, his appearance, or even the ordinary calls of nature without constant supervision and control. The physical state of such patients suffers very much less than might be expected. Short irregular intervals of rest and sleep seem to suffice for the time being to prevent a serious degree of exhaustion, and a parallel state of affairs exists as regards food. This is frequently refused altogether or ignored owing to the patient's inability to attend to it for long enough, but the majority of patients take sufficient at one time or another to make tube feeding unnecessary. The way in which a meal is presented to the patient often decides whether it will be hastily gobbled up or flung on the floor.

The best drug for sustained excitement is, without question, sulphonal, properly given. Sulphonal is almost insoluble in cold water, and if given thus or mixed with solid food it is an uncertain, cumulative, and highly dangerous drug. In boiling water, however, it has a solubility of no less than 1 in 15, and though this, of course, rapidly decreases as the temperature falls, it remains quite considerable at body temperature. The drug should be dissolved, therefore, in boiling water, not less than 1 oz. to every 4 or 5 gr. of sulphonal, some vehicle, such as milk or alcohol, added and the mixture drunk hot. Given thus, its administration can be continued for weeks at a time, if the patient's bowels are kept well open, without fear of unpleasant toxic effects. The dose depends upon the patient's condition. At first it may well be 20 or 30 gr. a day, in three doses, but thereafter the patient can generally be kept sufficiently under the effect of the drug by doses totalling 15 gr. in the day or even less. For sudden, uncontrollable outbursts of excitement morphine and hyoscine must be given (gr. $\frac{1}{4}$ with gr. $\frac{1}{75}$). Hyoscine alone, in spite of its marvellous efficacy in certain instances, is too unsafe and uncertain a drug to be recommended for the home treatment of an acute case.

Heroic doses of calomel used to be held in great esteem in the treatment of acute excitement. The writer has little experience of the method, but there is considerable evidence that the drug has a distinctly sedative influence, apart from that produced by the profuse purging which it brings about. Some authorities believe in the administration of croton oil. The continuous warm bath is probably one of the best means of treating acute excitement, but, though quite possible, it is rarely easy or convenient to adopt this measure in a private house.

General Points

If a mental case of any acuteness is to be treated at home, the physician should insist upon at least two trained and qualified mental nurses being engaged, one for day and one for night. Nursing help from members of the patient's family is almost never satisfactory, though it may often be made use of to relieve the nurse for meals and time off duty, a matter for which provision must be made one way or other.

Mental patients are invariably much more difficult to manage, from the nurse's point of view, in their own homes than in a hospital, and, in addition to this, the nurse will not improbably meet with difficulty as the result of the fussiness, suspiciousness, or nervousness of the patient's relatives. The physician owes it to the nurses to give them the very fullest measure of support and to ensure that they have full authority in his absence, and are safeguarded from interference. The instructions he issues to them and the reports he receives from them should be more than usually detailed and explicit.

Two great practical requirements for the physician treating an acute mental case at home are: ability to use sedative drugs wisely, and readiness to resort confidently to tube feeding at the proper time. A working knowledge of the lunacy laws will save the practitioner much trouble, and the ability to talk to, and deal with, mental cases, generally speaking, as if they were ordinary sick people, is perhaps most of all to be coveted.

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Special Articles.

THE CAPITATION FEE FOR INSURANCE PRACTICE.

FURTHER SESSION OF THE COURT OF INQUIRY.

THE Court of Inquiry appointed by the Minister of Health to determine the capitation fee payable to insurance practitioners as from Jan. 1st, 1924, resumed its sittings on Jan. 8th in the Ministry of Health. The members of the Court are Mr. R. T. Hughes, K.C., chairman, Mr. F. C. Goodenough, and Sir Gilbert Garnsey.

TUESDAY, JAN. 8TH.

Mr. E. J. Strohmenger, C.B., Accountant-General to the Ministry, referred to the amended figures for cost of living in 1923 which Prof. Bowley had prepared on the suggestion of the Ministry. The new figures showed a fall in the cost of clothes and food, but they still showed an increase in the cost of fuel and light, although the Department were advised that there had been no change. Personal expenses and the cost of household supplies had also fallen since 1920, but Prof. Bowley's figures did not show this. Even on the doctors' calculations a fair comparison between 1920 and 1923 showed a fall in a comparable standard of living which was certainly no less than the fall in the Civil Service bonus. The Department were of opinion that the Civil Service bonus test was the fairest to apply; it involved no contentious assumptions as to the standard of living. The Ministry had made no pre-war comparison; no one could say what was the pre-war value of the present services required from insurance doctors. The only firm figure was the 11s. of 1920.

Prof. Bowley, questioned by Dr. Brackenbury, said that although, at the request of the Ministry, he had prepared alternative figures for 1923 he regarded his original figures as more valid and considered that the altered conditions affecting the doctor's budget for 1923 should be taken into account.

The Experience of Insurance Committees.

Mr. E. R. Abbott presented the case of the National Association of Insurance Committees and the Association of Insurance Committees for Wales. He said that the National Association of Insurance Committees had been formed in 1913. Section 31 of the National Insurance Act, 1913, authorised insurance committees to pay a subscription as part of their general expenses towards the funds of such an Association, and his Association, which represented 118 committees, could therefore claim to speak with an authority which was recognised by Act of Parliament. Of the members of every insurance committee three-fifths represented insured persons who were members of approved societies, the remaining two-fifths represented doctors or chemists or were appointed either by the local authority or by the Minister. The principal duty of the insurance committee was to administer medical benefit under the Insurance Acts; if anyone had authority to speak on the character of the medical service given to insured persons it was they, for they were in continual touch both with the doctors and the insured persons.

The Association had sent a questionnaire to all insurance committees; the Christmas holidays had delayed matters, but in spite of that, replies had been received from 24 county and 48 county borough committees. The replies stated unanimously that the service given by insurance practitioners had been faithfully rendered. In considering the complaints which were sometimes alleged against the medical service, it was often not sufficiently realised that the doctors not infrequently had very difficult persons to deal with. His insurance committee (Middlesex) had, since 1920, been called upon to investigate only 13 cases of irregular certification and 7 of these had been dismissed.

The Rev. William Dennis Yoward, President of the National Association of Insurance Committees, gave evidence in support of the replies given by the individual insurance committees. He explained that the Association had been in session in October when the question of the 1924 capitation was being considered, and the executive council had been authorised to take any action which might become necessary in connexion with that matter. In his experience the insurance doctors had carried out their duties in a proper spirit; his own medical service subcommittee had had only one case of negligence and one case where the doctor had tried to charge fees improperly; there had been similar experience in other districts.

Replying to questions by the Chairman on the specific points raised in the questionnaire, witness agreed with the unanimous expression of opinion that the contracts made by insurance practitioners, taken as a whole, had been faithfully rendered, and that the service was such as might reasonably be expected of average general practitioners. He agreed with the view generally expressed by the committees that there had been an improvement in the quality of the insurance medical service since the inception of the National Insurance Act; as regards diagnosis and treatment there had, in his opinion, been considerable improvement. He also thought there had been a great improvement in the medical service as compared with the facilities available in pre-insurance days. He considered that, with one or two exceptions, insured persons receive as good a service as is rendered to private patients in similar positions. He agreed with the views of the committees that the doctors had not taken unfair advantage of their right to claim that certain services did not fall within the terms of their contract; his experience showed that the doctors had not only fulfilled their contract, but had often gone beyond it without asking for special payment. He agreed with the almost unanimous opinion of the committees that doctors were not reluctant to visit cases needing treatment at home.

In reply to Sir Gilbert Garnsey, Mr. Abbott stated that the total number of insurance doctors for England was just over 12,000, and the number of insured persons 12¼ million.

Sir Gilbert Garnsey said that from the complaint figures given by Mr. Brock on the previous day it appeared that on the average one insured person in every 12,000 complained once every four years—this seemed a very small number.

The Chairman: An amazingly small number.

Mr. Edwin Potts, hon. secretary of the Association, said that he fully agreed with the evidence of the Rev. Yoward. In his experience the average insurance doctor did not, before rendering a doubtful service, inquire whether he was obliged by his contract to do the work; he gave the insured person the treatment which his condition required. The returns from 81 committees showed that since 1920 there had been only 456 questions raised with regard to the range of service, although there had, during the same period, been 2369 claims for special fees for anæsthetists' services. In one county, although 706 fees had been paid for anæsthetists' services, no question had been raised as to range of service. The witness thought that the insurance service compared favourably with pre-insurance contract service; it was more settled and stable, and he hoped to see it extended eventually to the dependents of insured persons.

Sir Thomas Neill said that he wished the Court to be informed of the fact that the questionnaire sent to the insurance committees had not, in fact, been considered or approved by the committees in full session. He did not say that the answers would have been different had the committees been able to consider them, but he wished to make it clear that the representatives of the insured persons had not had the opportunity of considering the replies.

Twenty county and 23 county borough committees had not replied to the questionnaire. When the committees met there would be discussion on the matter, and possibly the Court would have representations made to them at a later stage. Dr. Cox inquired whether Sir Thomas Neill proposed to take the opinion of all members of approved societies before submitting his evidence. In reply to the Chairman, Sir Thomas Neill said he did not wish to ask the witnesses any questions, because in his view the proper evidence was not before the Court, having regard to the fact that the replies had been drafted by the chairman and clerk of the committees, and sometimes by the clerk only, but not by the full committee.

The Chairman suggested that as three-fifths of the insurance committees represented members of approved societies, the chairman should often be a society representative. He was very anxious to consider the matter from every point of view. They would take into account the method by which the answers to the questionnaire had to be prepared, but he could not help feeling that the view expressed by 80 out of 123 committees probably represented the general opinion.

The Medical Service in Scotland and Wales.

Mr. F. Llewellyn Jones, giving evidence on behalf of the Association of Welsh Insurance Committees, said that he was satisfied that there had been an improvement in the medical service under the Insurance Acts. Practically all medical practitioners in Wales were insurance practitioners also. Questions as to range of service were almost unknown. He had found that whenever important questions affecting the medical service had arisen, the medical members of the insurance committee had considered the complaints in a judicial manner. In reply to the Chairman, witness said he had no reason to suppose that those committees who had not answered the questionnaire would have disagreed with the replies before the court, or that the replies of the chairman and clerk did not represent the views of the committee as a whole; in the case of his own committee (Flintshire) the vice-chairman, who was the representative of an approved society, had endorsed the answers. Replies had been received from all the large committees.

Mr. W. M. Marshall gave evidence on behalf of the Scottish Association of Insurance Committees. Thirty-five replies had been received to the questionnaire. Both his executive committee and the committees who had replied agreed that the medical service had been and was a good one, in the main. There were bound to be occasional cases of neglect and of irregular certification, having regard to the numbers of insured persons and doctors concerned, but during the last two and a half years the number had been negligible. There had been only 29 cases of complaints as to treatment, and of these ten were not sustained. He agreed that, on the whole, insured persons were treated as well as private patients. In 11 years no case had been raised in his area (in which there were 220 insurance doctors) as to whether any service was or was not a general practitioner service. Throughout Scotland there had been only two cases of disagreement between the local medical committee and the insurance committee on a question of range of service. The usual county insurance practice was 300 to 500 patients; for boroughs it was 1000 to 2000. The number of services per insured person per annum varied widely. In some country areas it was as low as two; in more populous districts it was as high as four; while the figures of a doctor with a panel of 750 patients in a mining village showed nearly five services. In reply to Sir Thomas Neill, the witness said that many people might hesitate to complain against their doctor, particularly in areas where only one doctor was available.

Dr. Gordon Ward, on behalf of the Medical Practitioners' Union, put in further figures on some of the points which had been raised by the Ministry. An analysis of the advertisements for the sale of practices which had appeared in THE LANCET during 1923 showed an average minimum fee in private practice of 3*s.* 6*d.* The National Deposit Friendly Society operated much on the lines of the national insurance scheme, and the average fee there worked out at 4*s.* to 5*s.* a service. As regards the number of services which a doctor could perform in a day, witness instanced the case of Kent, where the maximum number of services would be 25, because the population was not large enough to allow a greater amount of work being distributed among the doctors practising there. Although advertisements had been mentioned which quoted the size of the panel practice, it must be remembered that in very many advertisements the vendor stated, as an inducement to purchase, that there was no panel.

The Ministry's Case.

Mr. M. L. Gwyer, solicitor to the Ministry, then closed the case for the Ministry. He said that he wished to emphasise the fact that the Ministry had not attempted to fix a capitation fee on the basis of ensuring a whole-time living wage; they did not offer a fee which would insure the medical profession against unemployment or insufficient practice, neither were they concerned with the number of potential patients. Their case was that for the time and trouble which a doctor gives to his insurance patients a capitation of 8*s.* 6*d.* was fully sufficient. What the doctor did outside and beyond his insurance work could not enter into their calculations.

Although the Ministry had suggested a total of 24 services a day for half-time work, it was interesting to note the results obtained from the figures submitted by the Insurance Acts Committee. A net income of £1200 represented a gross income of £1400; the half of this—£700—represented a list of 1650 insured persons at a capitation fee of 8*s.* 6*d.*, and on a 3·5 attendance basis this would mean 19 services daily. If, as was suggested, the present capitation fee was insufficient and failed to attract men to the service, why was it that the number of panel doctors had increased even since the fee had been reduced from 11*s.* to 9*s.* 6*d.*? It might be thought that the Ministry had been too meticulous in their calculations, but the service covered so great a number of insured persons that fractional calculations were of importance; a variation of every shilling in the capitation fee represented £750,000. In conclusion Mr. Gwyer expressed the hope that the Court would indicate in their report for what period the new capitation fee should be applied.

The Chairman inquired whether the Court was able to fix a period binding on both parties, or whether in this respect they could merely make a recommendation.

Mr. Gwyer replied that the parties had agreed to accept the capitation fee for a period of one year; any recommendation for a longer period would, of course, be treated with great respect, but would not be binding.

Dr. Brackenbury agreed, but said that the profession definitely did not approve the principle that an award for a longer period should be at a lower figure.

Dr. Ward expressed the hope that an award for a longer period would not be regarded by the Minister as taking the place of the Royal Commission which had been promised.

Private Contract Rates.

Dr. Cox made a statement on the figures quoted by Mr. Jeffrey for Scottish contract practices. Mr. Jeffrey had tried to show that the fee of 9*s.* 7*d.* for Scottish colliery districts was really only worth 7*s.* 1*d.*, yet in 1919 when the Scottish doctors were negotiating with the miners they had agreed to accept as the general basis the count in a certain mining village, and that count had resulted in the average figure of 5·25 dependents, which gave an equivalent of 9*s.* 7*d.* Mr. Jeffrey had quoted some of the lower capitation rates which existed in contract practice,

yet there were many high rates also. Thus, in Leicestershire 41,000 persons received benefit under a scheme which paid 13*s.* per head for treatment and medicine; the same figure applied to Bournemouth and Southampton. It would be unfortunate and entirely wrong if the doctors were put at a disadvantage as regards insurance practice because they were in certain instances accepting a low rate for dependents. The cases were not parallel. Treatment for dependents did not involve the keeping of the official records or the issue of onerous certificates, and many services carried a special fee. If the doctors, following the tradition of the profession, gave treatment to dependents at a rate lower than the average it would be unfair to penalise them on this account in respect of their other work. He had frequently warned the profession that an attempt would be made to reduce their capitation fee by a reference to some of the rates for contract treatment to dependents.

The Doctors' Case.

Dr. Brackenbury then concluded the case presented on behalf of the doctors. He said that he did not propose to deal in great detail with the comments made by the other side, because in his view there were certain broad principles which would necessarily determine the question. As to the range of service, he was content to accept the statement made on behalf of the Ministry and the evidence of the insurance committees. Every insured person was, however, entitled to the services of a second doctor in an emergency, the payment for that service coming out of the pool provided by the capitation fees. An insured person could also claim the services of a second doctor whenever his own doctor was away, and there was a similar provision when an anæsthetic was required. These facts were material in any comparison made with private practice.

It was said that in spite of a reduction in the capitation fee there had been a sufficient entry into the service. This might be true as regards total numbers, but the average doctor could not avoid undertaking insurance practice, and it was therefore illogical to say that the terms were adequate because the doctors undertook this class of work. At present many doctors starting in practice asked themselves "How can I avoid insurance work?" The Insurance Act would not have attained its object until there was a willing service by the doctors. There might be a sufficiency in the total number of doctors without an adequate distribution. There were industrial areas offering little or no practice outside insurance work. To attract doctors to those areas you must make it worth their while either by a differential capitation fee or by taking those circumstances into account in fixing the uniform capitation fee.

They had been criticised for their comparison of the responsibility of insurance practitioners as between 1913 and 1923, but they considered that if the Court desired to make a comparison between those years the cumulative effect of the additional services required from the doctors should be taken into account. Even in 1913 both the State and the doctors intended insured persons to have a full general practitioner service, but the conception of what that involved had developed in the intervening years.

The Ministry contended that the convergence of the results shown by the Ministry's different methods of calculation proved the correctness of the results; but there was equal convergence of the results obtained on their side. The doctor's case was that the fee of 7*s.* 3*d.* of 1913 or 11*s.* of 1920 should be applied to present-day conditions. It was suggested that both these figures should be abandoned as a basis of calculation, but he did not agree. The arbitrators in 1920 gave no explanation of the method by which they had arrived at their award, and he was at least entitled to assume that (as certain calculations which he had made seemed to suggest) they did accept the 7*s.* 3*d.* basis. It had been said that the 11*s.* rate would have been less had it not been for inflation; but he was equally entitled to say that had the arbitrators known that prices would continue to soar—as they had done—after the date of the award, they would have fixed a higher figure. As to the cost of living figures on which the doctors' case was based, Prof. Bowley's tables for 1920 were generally admitted to be valuable. Prof. Bowley had taken the actual figures for 1913 and had then applied them to 1920 by considering the actual middle-class budget for the latter year; now, in 1923, he applied the same principle by asking what was a reasonable way in which a similar budget would be expended at the present time. It was unfair to write up the 1920 budget for purposes of comparison with 1923 unless the 11*s.* capitation fee of 1920 were also scaled up and adjusted. Even if they considered the amended figures, the new capitation fee would be 10*s.* 4*d.* or 9*s.* 2*d.*, according to whether it was worked out on the 7*s.* 3*d.* or 11*s.* basis.

As to practice expenses, it was true that in some of the paragraphs of their printed case they had taken 16 per cent., but this did not represent their view of a reasonable figure. In previous years they had worked on the 25 per cent. basis and the Ministry had accepted that percentage; his colleagues were very emphatic that even this was too low, certainly as regards small practices and large practices. Mention had been made of cases where the minimum fee of 1*s.* 6*d.* was charged in private practice, but he suggested that such instances should be ruled out; the Insurance Act had been introduced to put an end to that sort of thing. A minimum fee mentioned in an advertisement represented the absolute minimum charged to any of the doctor's patients; it was not necessarily the normal or average figure and might be applicable only to a few patients.

Regarding the time equivalent, they did not quarrel with the instructions which had been issued to regional medical officers in connexion with the examination of the records on which the Ministry's figure of 3·5 services per insured person per year had been based; but they did say that it was almost impossible to carry out those instructions in detail. His committee had collected statistics affecting over 600,000 insured persons, and these showed the correct figure to be 3·77. During the 1920 arbitration the Ministry had themselves adopted the figure of 3·8. It was significant that in Manchester and Salford, where it was to the direct interest of the doctor to keep a careful record of all visits and attendances, the figure was 4·35. He suggested that it was not, in any case, safe to work on the lowest figure which had ever been arrived at and which had been determined with reference to a particular year. The profession were making no extravagant claim in suggesting that the calculations should be made on the basis of 3·8.

As to the number of services which would occupy a doctor's whole time, the calculation of 300 working days of eight hours each, allowing only Sundays free and a fortnight's holiday in the year, was in itself fairly severe. Further, it was wrong to take account only of the time occupied in actually seeing the patients. To that must be added the time for writing the certificates, records, &c. required by the Regulations, and there was also the professional thought, consideration, and reading which the doctor had to give to his work; it might be difficult to translate this into a time equivalent, but it was a very real factor to be taken into account. It had been suggested that 10 consultations might be given in an hour, but in his opinion that could not be done; it might be possible for routine work, but in the midst of the routine work there would arise a special test or other special service which would hold up the doctor for a considerable time; even 5 per cent. of special cases occupying 10 per cent. of extra time—a low estimate—was a factor to be considered. The Ministry's case was based on a high number of working days per year (300), a high number of services per day (48), and a low service rate per insured person per year (3·5). In his opinion that represented an amount of work which could not be done with justice either to the doctor or to the patients. Dr. Smith Whitaker had suggested that if 2000 insured patients would take up more than a doctor's half time, let them assume a fraction of four-sevenths; if they did that the

capitation fee of 8*s.* 6*d.* would at once be raised to 9*s.* 9*d.* The Ministry had said that the 8*s.* 6*d.* capitation fee was equivalent to a service fee of 2*s.* 5*d.*, which, in turn, was worth the equivalent of 3*s.* in private practice. Even accepting the latter figure the fee would be very moderate, but he suggested that if one made an addition to the 2*s.* 5*d.* figure because there was no cost for medicines or collection, and no bad debts, a corresponding reduction should be made for the additional work which had no counterpart in private practice—e.g., certificates, the provision of a second doctor, &c. In conclusion, Dr. Brackenbury expressed the opinion that the profession had been modest rather than extravagant in assessing the value of their services to the State and to their patients.

At the close of Dr. Brackenbury's remarks, the Chairman, amidst general applause, said that the profession were fortunate in having so able an advocate.

The Court adjourned until the 15th to hear the evidence of certain independent approved societies. The main case of the approved societies will be stated on the 21st.

FOOD IN RELATION TO HEALTH AND DISEASE.

FOOD in its relation to health and disease can be considered broadly in two aspects: firstly as a medium by which disease may be spread throughout the population, and secondly, as an economic and dietetic problem, whereby the standard of nutritional value is maintained. It is the duty of the Ministry of Health to supervise the food-supply of the country with these two objects in view—the control of disease and the prevention of adulteration. How this duty has been construed is made clear in the passages from the report of the Chief Medical Officer which are here summarised.[1]

Milk: Production and Distribution.

The importance of milk as an article of diet has long been recognised by those concerned in the investigation of nutritional requirements, but of all foodstuffs milk and its products have been the most blamed for the spread of disease on the one hand and have been most often adulterated on the other. Hence the necessity for the very strict control of all that appertains to the dairy. Since 1885 the sanitary authorities have administered regulations for the maintenance of a clean milk-supply, but even now at least 5 per cent. of the milk coming into London, when sampled at the termini, contains tubercle bacilli. As the importance of milk as a possible source of infection, particularly of tuberculosis, became more and more evident, a scheme of grading the milk according to its purity was introduced in the Milk and Dairies (Amendment) Act of 1922, and the Milk (Special Designations) Order of 1923 sets forth the principal conditions applying to the various classes of milk.[2]

The system of licensing involves the inspection by the Ministry of farms and retail depôts in various parts of the country. Such inspections include a survey of the methods of milk production by means of the score card, the identification of animals in the herds, the methods of handling, bottling, and distribution, and compliance with the regulations for the several grades. The growing interest taken by milk producers, distributors, and consumers in the supply of a milk of special purity is indicated by the steady increase in the number of licences for which application is made, but at present the amount of this high-grade milk supplied is almost negligible. The production of such milk has a substantial educational advantage and proves the practicability of an improved milk-supply for all consumers.

It is important that the general public should realise the advantages of milk as a food, especially for growing children. Hitherto this country has been very backward in this respect, the average consumption per head of milk in Great Britain being less than one-third of that amongst the people of the United States. In fostering such a movement those concerned will do well to give due consideration to the many factors which account for the relatively small consumption of milk in this country. Amongst these not the least important is the unsatisfactory condition as regards cleanliness of a considerable proportion of our milk-supplies. The importance of obtaining a good name for milk in this respect should not be overlooked. The conversion of our population to a satisfactory standard of milk consumption will depend very largely on the energy displayed by all concerned in raising the whole standard of milk production and distribution to a level such as that which has already been reached by milk produced under the grading scheme. What does this involve? First, clean and healthy milch heads; secondly, clean milking; third, effective cooling of the milk immediately it is obtained; lastly, prompt bottling at the farm, or clean and rapid transit in bulk. These appear to be simple requirements, but their fulfilment demands thorough and continuous attention to detail and good organisation. For consumption in industrial towns there is much to be said for the use of pasteurised milk, but pasteurisation cannot make dirty milk clean; to be wholesome and to have keeping properties the milk must itself be clean.

Notwithstanding the numerous difficulties which present themselves in bringing offences home to milk adulterators, local authorities, as a whole, show commendable zeal in endeavouring to maintain its purity in this respect. The returns furnished by public analysts show that in general milk as sold to the consumer is satisfactory as regards milk-fat and other milk solids.

Food Poisoning.

During the past year a considerable number of outbreaks of food poisoning were reported. The origin of these outbreaks was investigated by local officers or by means of inquiries made by medical officers of the Ministry. It would be of assistance if the coroners understood that the bacteriological examinations should be made at the Bristol University by Mr. Bruce White, the material being forwarded by the doctor making the post-mortem; at times in large towns this doctor has practically an appointment and may think he loses dignity if the bacteriological work is not carried out by himself. The causes of food poisoning may be classified as being due to chemical poisoning, to bacterial invasion, or to ingestion of toxins contained in food. Lead, copper, and zinc from vessels employed in the distribution of beer and soda-water were responsible for some cases of chemical poisoning in London and Manchester. A case of zinc poisoning which occurred at Ipswich caused the local authority to issue a warning to the public against the making of jam in galvanised iron vessels. In this case a sample of home-made jam was brought to the local health department as it had been found to have a peculiar flavour. It had been made in a galvanised iron pan. The public analyst found that the jam was contaminated with zinc to a poisonous extent.

A large amount of work has been done in perfecting the electrolytic method of estimating arsenic. An apparatus has been evolved which constitutes a great improvement on previous types, and is likely to be adopted in other laboratories in preference to the zinc and acid method. During the year arsenic was discovered in samples of cocoa, tea, baking powder, and food wrapping papers, but no poisoning resulted in consequence. Arsenic had gained access to the cocoa, though not in deleterious doses, by means of potassium carbonate, contaminated with this substance which had been used in the preparation of cocoa to increase its solubility.

[1] Annual Report of the Chief Medical Officer of Health for the year 1922. H.M. Stat. Office, 1923.
[2] THE LANCET, 1922, ii., 1397.

Bacterial poisoning occurred on a considerable number of occasions in the last 12 months. In some, one person only or one family was attacked and the matter came to notice on account of the holding of an inquest. Other outbreaks, however, were on an extensive scale. The articles of food which came under suspicion as the cause of illness were of the most diverse nature. In many instances an organism of the Salmonella group was isolated. Outbreaks due to cheese are of interest, as in four instances cheese of Canadian origin gave rise to poisoning, on two occasions on a considerable scale; analysis of the cheese failed to reveal food poisoning organisms, but a water-soluble toxin was found to be present. Agglutination tests for the presence of members of the Salmonella group gave negative results, but in a small outbreak of food poisoning due to Wensleydale cheese positive results in this respect were obtained. Tyrotoxicon was not found in any of the cheeses.

Exaggerated Dangers.

The ingestion of toxins contained in food was exemplified by the outbreak of botulism at Loch Maree in August, 1922. The dramatic circumstances of the case directed public attention to possible dangers of poisoning which, though alarming in themselves, are less so when viewed in their relative proportions. A wholesale condemnation of preserved meats through fear of botulism or any other disease is both rationally and economically unsound. Of necessity, canned and prepared foods now enter largely into the dietary of the British public, and form an important and valuable part of the food-supply of the nation. That illness of one sort or another should occasionally result from their use, as it does from other forms of food, is well-nigh inevitable. Having regard, however, to the enormous quantities of canned and prepared foods consumed, the remarkable fact is, not that accidents should occasionally occur from their use, but that these accidents should have been so few and far between. In this connexion, it should be remembered that the outbreak at Loch Maree is the only authenticated instance of the occurrence of botulism in this country. The illness was attributed to the consumption of wild duck paste, prepared and put up in small jars in one of the best equipped and managed factories in London. A very large number of jars were all prepared at the same time and in exactly the same manner, yet only one jar out of a total of many thousands gave rise to botulism, the contents of the others apparently having been consumed without ill-effect of any kind. Alarm in respect of water-supply, milk, and food, may sometimes be justifiable and salutary, but unless the circumstances are quite exceptional such alarm may prove to be extremely damaging both to the national health and to national industry. Flour, cheese, milk, tea, coffee, cocoa, meat, and prepared foods form staple and universal articles of dietary, and sporadic or accidental contamination here and there should not so disturb the public mind as to lead to widespread condemnation or discarding of these foods. An accident, tragic and regrettable in itself, affecting a single household or a dozen persons may in these days of ready intercommunication be so widely announced and amplified as to lead to the deprivation of millions of people of their usual food and to irreparable damage to great industries, resulting in extensive unemployment and serious financial loss.

The immediate result of this outbreak was an investigation of the methods employed by a certain great food manufacturing firm in securing sterilisation of their products. These were found to be eminently satisfactory, and are all embodied in the steps which Sir George Newman details in his report for the protection of the consumer. The measures adopted are stringent and the habitual practice of them involves a thorough, sound, and comprehensive health administration of a factory. But experience shows that such an administration is practicable and business-like. If the custom and confidence of the consumer are to be secured and retained, such an administration, a sort of "industrial health conscience," is necessary. To be efficacious, and free from hazard and chance, such a health administration must be a partnership between four parties—(1) the manufacturer, (2) the central health authority, (3) the local sanitary authority, and (4) the public, as consumer. The consumer has his own responsibility in the domestic preparation or purchase of food. He is represented by public opinion and by the press. Both are of the utmost value in affording information, providing education, and raising the standard of the food-supply, and, as a corollary, the health and efficiency of the nation.

WORK OF THE FOOD INVESTIGATION BOARD.

In this department of the Committee of Scientific and Industrial Research the outstanding event [a] of the year is the equipment of the Low Temperature Research Station at Cambridge up to the point at which work could be begun. The research staff took charge and began work in June, 1922; the equipment of the station is not yet complete, but the first floor, devoted to fruit and vegetable work, was ready for the apple harvest, and the freezing tanks were ready in October, when the first lot of fish were frozen in them. Four chambers at the station have already been fitted with automatically controlled electrical heating; the designing and testing of this equipment has taken much time, but it has been found possible to maintain temperatures in these rooms over long periods with no greater fluctuation than 0·05 of a degree—an accuracy hitherto only obtained on a small scale by the employment of incubators. The facilities now provided will enable experiments involving bulky apparatus to be carried out.

The station was intended to fulfil two allied purposes—first, to act as an instrument for research carried out by the various committees of the Board, and incidentally to offer to workers in other laboratories of the University its own peculiar facilities for research in which low temperatures are required. Thirty-five such research workers at one time or another made use of it.

During the year under review a new development of the Board's activities took place, along lines laid down in 1918, of an intensive study of the physiology of the ripening process of a single fruit under normal and storage conditions. The apple was selected for this purpose, and when this investigation is completed other fruit will be studied in a similar fashion. The Board was asked to organise a small expedition to investigate, during an entire voyage from Australia, the gases in ships' holds in which apples were carried, and especially to compare the different methods in use for cooling the holds. The expedition left early in the year.

A brief abstract is given of the work of the Fish Preservation, Meat Preservation, Engineering, Fruit and Vegetables, Oils and Fats, and Canned Food Committees. The general theory of the freezing of tissues promises to be substantially advanced by the discovery made in connexion with experiments upon eggs that preservation does not depend upon a critical rate of cooling being exceeded, but upon the rate of cooling falling within certain limits. When these are observed, the changes which take place on freezing are reversed in thawing; when they are exceeded, the changes are irreversible.

[a] From the report of the Committee of the Privy Council for Scientific and Industrial Research for the year 1922–23.

SMALL-POX IN ENGLAND AND WALES.—The number of cases of small-pox notified in England and Wales during the week ended Jan. 5th had risen to 115, distributed as follows: Derbyshire 39 (Bolsover 2, Chesterfield 20, Heanor 4, Swadlincote 7, Blackwell R.D. 4, Chesterfield R.D. 1, Shardlow R.D. 1); Gloucestershire 26 (Gloucester 3, East Dean R.D. 23); Leicestershire 14 (Ashby Woulds); Northumberland 2 (Bedlingtonshire); Notts 34 (Hucknall 21, Kirkby-in-Ashfield 12, Basford R.D. 1).

SCOTLAND.

(FROM OUR OWN CORRESPONDENTS.)

Provision for the Treatment of Ophthalmia Neonatorum.

THE Scottish Board of Health has issued a circular to the local authorities emphasising the fact that ophthalmia neonatorum is a preventable disease, and that even where it occurs its disabling effects can be avoided by prompt and adequate measures of treatment. Advance has recently been made on these lines, but cases still occur in spite of the efforts of medical practitioners, midwives, and public health authorities. As a source of blindness, ophthalmia neonatorum is of first importance, and blindness, apart from the disaster to the individual, involves a very serious charge upon the community in the maintenance and education of totally or partially blind persons. The Board are impressed with the necessity that every local authority administering a scheme of maternity service and child welfare should make adequate provision for the hospital treatment of this disease, for in their opinion few, if any, cases can be treated at home with any degree of safety. Ordinary nursing is not sufficient; treatment must be carried out by a specially trained staff, therefore the Board requests all local authorities to make definite arrangements with a suitable hospital where such skilled treatment may be obtained, for accommodation cannot be satisfactorily improvised on the occurrence of a case. It is also desirable that accommodation be provided for the mother to accompany the child wherever it can be arranged. This provision is all the more necessary, as the possibility of secondary infections is recognised as an important factor in the continued incidence of the disease, and special precautionary measures are required where there is any reason to suspect a risk of infection from the mother. While it is essential that no delay should arise in providing treatment for any case, the Board realises that the cost and inconvenience of maintaining suitable accommodation in the smaller infectious diseases hospitals would be burdensome, as in most areas the annual case incidence is not large. To avoid this difficulty local authorities outside the larger centres of population are advised to make arrangements with some institution already providing the necessary skilled attendance. The net cost of such treatment is a competent charge on the child welfare grant.

With regard to cases in which the necessity for removal to hospital is not immediately apparent, it is the duty of the local authority to provide adequate skilled nursing at home, the cost of this provision being also a competent charge on the child welfare grant. In such cases the medical officer of health should, through the health visitors or visiting nurses, ascertain progress from day to day, in order that hospital treatment may be at once commenced if the disease shows any tendency to become more serious. As the total number of cases for Scotland is small, the expense of making suitable arrangements will not be heavy; indeed, compared with the cost of education and maintenance of persons blinded by neglected disease it will be negligible.

Measles in Glasgow.

A meeting of representatives of local authorities and medical officers of health from the larger areas in Scotland specially interested in the prevention and control of measles during epidemic periods was held on Jan. 10th in the offices of the Scottish Board of Health, Edinburgh. The meeting was convened by the Board with special reference to the recent epidemic of measles in Glasgow and contiguous areas and to the continued high proportion of deaths from the disease that occurs in children under school age. Captain W. E. Elliot, Parliamentary Under Secretary for Health for Scotland, presided. The present position and further measures possible for improved control and treatment of the disease, both in rural and urban areas, were discussed in their medical and financial aspects. Captain Elliot intimated a special limited grant from the Treasury to be administered by the Board in conjunction with the present grant in aid of maternity service and child welfare schemes in Scotland. There was a full expression of opinion as to the general lines on which the grant might best be utilised, and the Board will issue shortly a circular letter to local authorities on the subject.

Appointment of Medical Officer of Health for Aberdeen.

On Jan. 7th Dr. John Parlane Kinloch was unanimously appointed medical officer of health for Aberdeen in succession to Prof. Matthew Hay, who recently resigned the post. Dr. Kinloch was educated at Glasgow High School and University, where he graduated M.B., Ch.B. in 1909. Four years later he obtained the degree of Doctor of Medicine with commendation, and the Diploma of Public Health of Cambridge with distinction. While working in the medical health department of Glasgow before the war from 1909–10 in Ruchill Hospital, Dr. Kinloch had every opportunity of studying the problems of public health in its many varied branches. In addition he acted as instructor in public health to students and nurses in Ruchill Hospital. In 1914 Dr. Kinloch was appointed to a lectureship in public health at Aberdeen University and in the following year deputy medical officer of health for Aberdeen. During the war he was attached for a time to the 22nd Mobile Field Laboratory in France. Dr. Kinloch is the author of many publications on public health subjects, and his services ought to prove a distinct acquisition to the public health department and city of Aberdeen.

University of Glasgow.

At a meeting of the University Court on Jan. 10th Principal Sir Donald MacAlister received the congratulations of that body and of the Corporation of Glasgow on his baronetcy. Arrangements were made to coöperate with the Royal Society on the occasion of the Kelvin anniversary on June 25th, 1924.

A further appeal for the preservation of the Lister Ward has been received by the managers of the Glasgow Royal Infirmary. It comes from Ottawa, and bears the signatures of officials of the Canadian Ministry of Health.

HOLLAND.

(FROM OUR OWN CORRESPONDENT.)

Outlook for the Medical Student.

DURING the past year in Holland there occurred an "epidemic" of good health, which coincided with slack times in the business world, and while any improvement in the national health is an encouragement to those who make it their care, nevertheless the combination of these two factors had hardly a favourable effect on the economic position of the medical profession. The amount of work done by doctors amounted on an average to no more than 60–70 per cent. of a normal year, and the income of the non-panel practitioners decreased in proportion. This is not so very bad for old and established practices, but for the young doctors, of whom the supply at present exceeds the demand, these conditions make life rather hard. The more so as the demand for doctors from the Dutch colonies has ceased and as the Government seems inclined to reduce the already small number of Government posts, which in themselves are none too lucrative. Among others, Prof. van der Hoere, in the *Geneeskundige Gids*, is asking whether it would not be advisable to restrict in some measure the coming generation of medical students. Indeed, something can be said in favour of such limitation, provided a careful selection is made, not from those merely who can afford high training fees, the economically strong, but from those whose moral character, social attainments, and scientific proclivities mark them among their fellows. Such a selection, however, is exceedingly difficult.

It is almost impossible to form a right and just opinion regarding the moral and social qualities of the young medical students, and further, in general practice, the "scientific man" is, as a rule, not a great success. This limiting system is contrary to the Dutch national character; the only thing will be to inform the coming generation now at school about the practical problems and the economic conditions awaiting them. The public at large must disabuse itself of the old idea that doctors are rich men or earn a living easily. Only thus can the true interests of the medical profession be advanced.

Organisation of the Anti-Tuberculosis Campaign.

Up till the last few years the Dutch Government did not concern itself greatly with the fight against tuberculosis. The campaign lay entirely in private hands and was financed to a considerable extent by private contributions and charity. There were no "consultatie-bureaux" (dispensaries). The organisation was fairly primitive and was conducted in a more or less haphazard way. Small local unions paid their visiting nurses, who at the same time acted as district nurses and distributed various treatment appliances as, for example, Dettweiler sputum-flasks. There were no tuberculosis hospitals, and in most cases sanatorium treatment was too expensive for the man of moderate means, nor did the local unions have the funds to provide such treatment on a large scale. Well-to-do tuberculous patients went to Switzerland. Under these conditions the comparatively small number of sanatorium beds were taken up by serious cases in whom hope of recovery was small, a fact which did not increase the popularity of these institutions. The local unions were grouped into provincial unions and the latter formed one central organisation. In the last few years, however, a combination of circumstances has produced a rapid evolution. The reorganisation of the Government inspectors of public health, which resulted in a special investigation into the tuberculosis question, did much to help in this advance. Of still greater importance was the passing of the Disablement Act, which, in virtue of a certain clause, opens the possibility of preventive and prophylactic treatment through the insurance institutions; under this clause a large number of tuberculous patients applied for treatment. Moreover, the investigation committee succeeded in persuading the Government of the necessity of earmarking certain available sums for the treatment of indigent patients, and impressed the authorities with the necessity of efficient organisation in the anti-tuberculosis campaign.

The Dispensary System.

The plan advocated by the committee, and which will now be put into effect, embodies a separate and autonomic organisation of the campaign with the aid of dispensaries. In every district, in every province, and in some of the biggest towns, a district dispensary will be established under the supervision of a medical man, who need not necessarily be a lung specialist, but who must have business ability, as on this score previous undertakings had completely failed. Under him is a district visiting nurse who trains and controls the local visiting nurses. The medical man keeps in touch with the inspection and the provincial union, whereas, practically speaking, the central organisation has been eliminated. The district dispensaries are the nucleus of social and hygienic propaganda and at the same time form a confirmatory court for the family doctors in the diagnosis of tuberculosis. The bureau does not carry out treatment. This scheme is proving a success, also the insurance institutions are sending tuberculous patients to the dispensaries for examination before admission to the sanatoriums. Thus these dispensaries act as "transition" houses for the sanatorium patients, and further they concern themselves with the "after care" of discharged patients. The type of case now accepted by the sanatoriums for treatment is preferably that in which the patient has a good prognosis and a fairly mild infection, such as are likely to benefit greatly by a course of six months' care and hygienic education.

BERLIN.

(FROM OUR OWN CORRESPONDENT.)

The Battle of the Clubs.

THE ordinances concerning changes in medical attendance on club members have caused great indignation among the medical profession, as I stated in my letter of Dec. 15th, 1923. Interviews with the Government resulted in the withdrawal of certain clauses, especially those dealing with the erasure of a medical man from the panel during his time of contract if it was alleged that he had acted to the detriment of the club. The concessions of the Government were, however, held insufficient by the profession because the provisions limiting the further admittance of medical men to the panel were not amended. The strike for which preparations had been made ever since the new ordinances were published (and which probably might have been avoided if the concessions had been made earlier and on a more liberal scale), was therefore declared on Dec. 1st by the German Medical Union, the so-called Leipziger Verband. The strike became effective nearly everywhere throughout Germany except in the occupied territory, owing to political and social reasons, and in certain districts of Southern Germany, where the clubs had made common cause with the medical profession. The Leipziger Verband gave notice to the clubs that the contracts had been dissolved under German law owing to a vital change in an essential clause, and the clubs did not challenge the notice. The strike, which is still going on, is not a strike in the strict sense of the word, medical attendance being given individually when required, the club members being treated as private patients—i.e., they have to pay the fee for the consultation or the visit direct to the medical man; the prescriptions for medicine are written not as hitherto on vouchers of the club but on a private prescription form; consequently, the patients have to pay the chemist for their medicine. They can, however, recover the money paid to the chemist and the doctor in every individual case at the club offices, a lengthy and troublesome proceeding. During the struggle both doctors and clubs addressed the members through the press by pamphlets and even by posters, each party accusing the other of provoking the strike for futile reasons. The clubs expressed the opinion that the doctors, to put an end to the clubs, were deliberately endeavouring to destroy the shaky financial situation of the clubs, so that they would cease to exist; the medical men complained that the clubs were willing to make use of the ordinances to get rid of the free-choice system, which had lately been introduced almost everywhere after a long struggle. Mass meetings of club members have also been called in Berlin by the Medical Union, where medical men made use of their ability as debaters, inviting the members to assist the medical profession in its struggle against the committees of the clubs. The doctors pointed out that the free-choice system, the only system assuring careful attendance to club members, could probably be abolished under the ordinances. Under the system of appointed medical officers members were attended in a cursory manner and did not receive adequate treatment, notwithstanding the heavy contributions exacted. It is noteworthy that at the meetings held in Berlin a vote was unanimously passed supporting the demands of the medical men. Up to the present the "strike" (to use this word which is officially rejected by the medical profession) has been successful, only a few medical men having approached the clubs; their names were, of course, published in the medical press and every professional relation broken between them and their professional brethren. The Arbeits-Ministerium (Ministry of Labour) has tried to arbitrate between the parties, but without success, the only result being that the mutual accusations in the press and in pamphlets were stopped.

Plethora of Medical Journals.

Prof. Unger, one of the surgeons of the Virchow Hospital, draws attention to the fact that in spite of reduced incomes in the profession, which do not allow many of its members to subscribe to medical journals, the number of medical periodicals, though decreasing, is still much too large. Speaking of his own specialty, he mentions that two surgical "Centralblätter" are published in Germany in which every article and every work on surgery is reviewed twice by different writers. Concerning medicine in general, no less than four great medical journals are issued, the *Klinische Wochenschrift*, the *Deutsche Medizinische Wochenschrift*, the *Medizinische Klinik* in Berlin, and the *Münchener Medizinische Wochenschrift* in Munich, and in addition to those national journals there exist many local medical periodicals. He suggests that the publishers should reduce the number by amalgamation. If the publishers will not agree to this, he proposes that the surgeons should henceforth combine in subscribing to only one particular Centralblatt in order to compel the other to amalgamate or to disappear. He also urges the medical profession to act in the same way with the weekly medical papers. According to Prof. Unger, it would be no great loss if some of the articles now appearing in the medical press had never been printed at all, while in the remainder efficient cutting down would save much space.

Underfeeding Amongst School Children.

The Berlin Municipal School Board has lately made an inquiry in 12 of the municipal schools as to the present condition of the children. The results of the inquiry showed a rather sad state of matters: 16·5 per cent. of the children had come to school without having had coffee or warm soup in the morning, 38 per cent. had had no bread for breakfast, 6·38 per cent. had brought no lunch sandwiches to school, 5·06 per cent. had had no warm meal the day before, and 31·2 per cent. had only one warm meal in the day. In 15 per cent. footgear was very defective, and in 16·34 per cent. the clothes were inadequate.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Comdr. R. R. Horley is placed on the retd. list with rank of Surg. Capt.

ROYAL ARMY MEDICAL CORPS.

Col. S. F. St. D. Green, late R.A.M.C., to be Maj.-Gen., to complete estabt.

Col. A. J. Poole, on ceasing to be empld., is placed on half pay.

The undermentioned Cols., late R.A.M.C., retire on retd. pay: P. Evans, G. St. C. Thom, E. T. F. Birrell, and E. W. Bliss.

Col. C. W. Profeit, late R.A.M.C., is placed on half pay.

The undermentioned Lt.-Cols., from R.A.M.C., to be Cols.: J. W. H. Houghton, G. M. Goldsmith, R. H. Lloyd, Bt. Col. J. M. Sloan, H. D. Packer, and J. W. Leake.

Majs. to be Lt.-Cols.: Bt. Lt.-Col. A. W. Sampey, H. Rogers, S. M. Adye-Curran, L. Cotterill, W. J. S. Harvey, and Bt. Lt.-Col. B. A. Craig.

Temp. Capt. E. A. Tozer relinquishes his commn. and retains the rank of Capt.

Capt. F. J. Hallinan to be Actg. Maj. whilst empld. as Dept. Asst. Dir. of Pathology.

RESERVE OF OFFICERS.

Maj. and Bt. Lt.-Col. C. G. Spencer, having attained the age limit of liability to recall, ceases to belong to the Res. of Off.

ROYAL AIR FORCE.

Flying Officer F. K. Wilson ceases to be seconded to the Bristol Infirmary.

INDIAN MEDICAL SERVICE.

Lt.-Col. J. A. Black to be Col.

Puranganal Abraham Mathew to be temp. Lt.

Obituary.

GEORGE ALEXANDER HEATON BARTON, M.D. BRUX.

IT is with deep regret that we announce the death of Dr. G. A. H. Barton, anæsthetist to the Royal National Orthopædic Hospital and to the Hampstead General Hospital, who met with a fatal accident when on horseback in Hyde Park on Sunday, Jan. 13th. Dr. Barton, who was 56 years of age, was an old student of St. Mary's Hospital, where he qualified L.S.A. in 1886 and M.R.C.S. Eng. two years later. In 1901 he graduated M.D. of Brussels University. From the first he specialised in anæsthetics, on which he became a recognised authority, his writings including "A Guide to the Administration of Ethyl Chloride" and "Backwaters of Lethe," which first appeared in 1920. Various articles in medical journals dealt with methods and technique of administration.

A colleague writes: "Dr. Barton was not a man of one side only, but it is only on that aspect of him which appeared in his activities as an anæsthetist that I am qualified to speak. Even so, one was able as a colleague to recognise that Barton was no ordinary man. In his work he showed ingenuity, observation, and perseverance. Further, he made it obvious that he possessed a considerable sense of humour, that he had understanding of human nature, and that he was by no means insensible to the literary and artistic sides of life. These qualities appeared also in his contributions to the literature of his own subject. It is of the first importance for an anæsthetist, more so perhaps than any other medical man, to have the faculty of rapid insight into the mentality of the individual with whom he is dealing as a patient, of accommodating himself to that individual's character, and entering into sympathetic control of him. Barton was well qualified to meet the subjects of his administration in this manner, and his success with them depended as largely on this power as it did on the actual skill of his work. The rather elaborate sequence of anæsthetics which he affected was employed by him with much tact and skill and gave in his hands excellent results. Barton had a sly humour which was not easily apparent to those who were not intimate with him, but which will be sorely missed by his friends. He was a man who formed his own opinion on professional questions and did not merely re-echo those of other men. As a speaker, at the old Society of Anæsthetists and later at the Section of Anæsthetics of the Royal Society of Medicine, which bodies he frequently attended, he was always logical as well as tireless. His sudden death is a great loss to his former colleagues as well as to the many patients who appreciated the value of his professional services and of his personal character."

HENRY ARTHUR LATIMER, M.D. DURH.

Dr. H. A. Latimer, a well-known local figure in medical and civic public life, died on Jan. 10th at his residence in Tunbridge Wells, aged 74. Dr. Latimer was the son of the late Mr. Isaac Latimer, J.P., former Mayor of Plymouth. He received his medical education at Guy's Hospital, obtaining the qualifications of L.S.A. and M.R.C.S. Eng. in 1871, later graduating as M.D. at the University of Durham. For 41 years he conducted a successful practice in Swansea, and played an important part in public medical affairs. He was for 13 years a Direct Representative on the General Medical Council, retiring along with Dr. H. W. L. Browne at the end of 1919, and he often presided at the meetings of the South Wales and Monmouth Branch of the British Medical Association. He held appointments as consulting surgeon to the Swansea Hospital and as medical officer of the local provident dispensary.

Dr. Latimer also took a great interest in the civic welfare of Swansea where he was a member of the town council, a justice of the peace, and a member of the old school board.

In 1912 Dr. Latimer retired from practice and took up his residence in Tunbridge Wells, when he soon showed his keen interest in municipal affairs. He was elected to the town council in 1914, becoming Mayor in 1919–20, and deputy Mayor in 1920–21. During his seven years on the council he took an active and prominent part in the work of many committees, while for a time he was a member of the District Education Board. During the war he was chairman of the local Medical War Committee, and in 1918 was employed by the Ministry of National Service as a member of a Travelling Medical Board for the purpose of examining medical men for the army. As chairman of the Surgical Aid Society, and as one of the lecturers and examiners of the St. John Ambulance Brigade his services were greatly appreciated. He also served on the committees of the Natural History and Philosophical Society and the Rescue and Preventive Society.

One of the officers of the British Medical Association writes of him: "During the past ten years I have only occasionally met Dr. Latimer, whose loss his old friends deeply deplore, but between 1903 and 1913 I saw a great deal of him, constantly worked with him, and developed a great respect and affection for him. He had a very attractive personality and was an excellent speaker. He was one of the men who held strongly by Bacon's saying that 'Every man is a debtor to his profession,' a saying which he often quoted and certainly did his best to exemplify in his life. He gave up not only his leisure but much of the time he might well have been spending profitably in his practice in the service of his fellows, and it is due to his colleagues at Swansea to say that they were always grateful to him for it. Latimer was an excellent example of the good general practitioner who believed that he had a duty not only to his patients but to his fellow practitioners, and practised what he believed."

Dr. Latimer was a man of wide culture and reading, and a polished speaker. His contributions to medical literature were few and weighty: among them a study in our own columns of fibroid phthisis in copper workers. He is survived by his widow, his only son having been killed in the war.

THE LATE SIR JOHN TWEEDY.

IN an obituary notice of the late Sir John Tweedy which appeared in THE LANCET last week, while mentioning fully his various public activities, we gave few details of his clinical work. We now supplement our notice with an account of his ophthalmological work which has been sent to us by one of his pupils and colleagues.

"Probably Tweedy's most valuable contribution to ophthalmology was his demonstration that immature cataracts might be safely extracted. Such cataracts were left severely alone, as experience showed that post-operative inflammation almost invariably followed attempts at their removal. The procedure he adopted was to open the capsule at its periphery and not on its anterior face, thereby preventing the lens matter, which of necessity was left behind, from irritating the iris. He practised this method for many years, until with the advance of knowledge the correct explanation of the cause of post-operative inflammation rendered it unnecessary; but the important point is that he demonstrated the feasibility of removing immature cataracts, and his example was quickly followed with the result that the period of incapacity in such cases has been enormously diminished. Another important contribution was that, instead of adopting uniform treatment for all cases of hard eyeball, he pointed out the importance of ascertaining the precise physical condition causing the increased tension in such cases, and having found it, he removed it if possible. Thus, in those difficult cases of cyclitis with increased tension, he advised repeated paracenteses of the anterior chamber, using an extra broad needle for the purpose.

"He was one of the first, if not the first, of the Moorfield surgeons to protest against indiscriminate tenotomy in cases of internal strabismus, pointing out that the rational procedure was by correction of the hypermetropia combined with orthoptic treatment; he rarely or never did a simple tenotomy. But, on the other hand, he described in THE LANCET, March 22nd, 1884, a method of advancement which became the usual operation practised at the hospital. The cosmetic results of the operation in his hands, in cases of secondary divergence, were extraordinarily good, although he employed no fancy method of suturing the tendon. Conical cornea was another subject which interested him, and he thought the explanation of the condition was to be sought in some error of development. He treated the condition by cauterising the apex of the cone, and was very insistent on the necessity of making a complete perforation of the cornea. Tweedy's name occurs in most text-books of to-day as advocating the value of quinine lotion in the treatment of diphtheritic conjunctivitis. This was suggested many years before the discovery of the bacillus of diphtheria. He held the view, which was not the accepted one at the time, that the diphtheritic process was a local infection, and with the removal of the latter, the general symptoms would disappear. The effect of the fifth nerve on the nutrition of the cornea was a subject which also interested him much. In addition to the obvious connexion of ophthalmic herpes with corneal lesions, he explained similar lesions of the cornea, unaccompanied by skin eruptions, as probably being due to changes in the ophthalmic nerve or Gasserian ganglion, such changes being in his opinion irritative and not paralytic. These ideas were formed long before the removal of the Gasserian ganglion directed attention to the subject."

In THE LANCET in 1888 (see THE LANCET, 1888, vol. i., p. 966) Tweedy wrote on the extraction of immature cataract and gave a full description of the first case where he performed the operation some eight years previously and with perfect success, since which operation, he said, "I have rarely refused to extract a cataract, no matter how immature, whenever both eyes were so affected that the patient was unable to earn his livelihood; and I have operated on such cases almost as often as they presented themselves." This pioneer patient was a compositor, and a few weeks after a prompt recovery was reading "brilliant" type fluently with suitable glasses.

Any notes of Tweedy's ophthalmic work would be incomplete without a reference to his robust faith in the value of internal medication. His therapeutics were not empirical, or at any rate he could always give a reason why he was using a drug in a particular case. Perhaps the greatest tribute of all to Tweedy's work as an ophthalmologist is to be found in the wide view he took of the subject, the result of his philosophic and well-stored mind.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

PARLIAMENT was opened by the King in person on Tuesday last. Contrary to expectation the speech from the Throne contained no reference to health insurance proposals. The main features, so far as home politics are concerned, were that the local authorities were being approached with a view to increased activity under those sections of the Housing Act which enable the working population to become the owners of their houses, and that further measures would be taken to relieve unemployment. H.M. Ministers regretted that the country had not accepted the recent proposals laid before them. Bills would be introduced to improve the position of pre-war pensioners, to amend and consolidate the Factory and Workshop Acts, and to ascertain the costs and profits in connexion with the distribution of milk.

Correspondence.

"Audi alteram partem."

CENTENARY OF THE LANCET.

To the Editor of THE LANCET.

SIR,—The Council of the Royal Society of Medicine desires to take the opportunity—its first meeting since your Centenary—of offering its most cordial congratulations to the Editor and proprietors of THE LANCET on the occasion of its Centenary.

The Council feel that, representing a medical society which celebrated its own centenary in 1905, there is a special appropriateness in congratulating those responsible for the carrying on of their brilliant contemporary. The Society has subscribed to THE LANCET from its first number, and during the hundred years which have passed there has been no addition to its library that has been so eagerly looked forward to and read, and it is not too much to say that its pages have always proved a constant encouragement and support to the advance of medicine in its broadest and best aspects. The Council is delighted to see that under its present management THE LANCET has begun its second century with every prospect of carrying on, so that a hundred years hence their successors may be congratulated on having proved themselves worthy in every respect of their founder and their predecessors.

Yours very truly,

W. HALE-WHITE,
1, Wimpole-street, W., Jan. 8th, 1924. President.

THE AURICULAR BEAT.

To the Editor of THE LANCET.

SIR,—I have read the article by Dr. A. J. S. Pinchin and Dr. S. R. Gloyne in your issue of Jan. 12th with much interest, but I do not understand what is meant when they state "At the apex of the heart the auricular beats . . . could be heard as loud regular *beats* . . ." (the italics are mine). The first sound of the heart has been assumed to be due to the contraction of the ventricular muscle as well as to the closing of the mitral valves, but of late it has been recognised that muscular contraction produces no sound. Does the closing of these valves, if they produce a sound, give rise to the ventricular or auricular "beat"? At the post-mortem examination there was found 5 ounces of fluid in the pericardium, and the movements of this increased quantity are, I venture to think, sufficient to account for any added sounds. It is not recorded whether there was any negative pressure intra-pericardially. In such cases the negative pressure has generally disappeared and the fluid movements are consequently less restrained and give rise to more sounds.

I am, Sir, yours faithfully,

Swansea, Jan. 15th, 1924. G. ARBOUR STEPHENS.

PROF. WHARTON JONES AND THE LATE SIR JOHN TWEEDY.

To the Editor of THE LANCET.

SIR,—I consulted Sir John Tweedy for the first time in 1883 or thereabouts, and on that and another occasion had to be insistent before I could prevail upon him to accept a fee. I should like to add to the names of the eminent staff of University College Hospital at the time when he became a medical student the name of Thomas Wharton Jones, who was held in affectionate esteem by Sir John Tweedy, as well as by the famous Professor Huxley, who had been his pupil and who is reported to have said of him with emphasis "He taught me everything." It is on record that Wharton Jones described Sir John Tweedy as "my best ophthalmic pupil," while Sir John Tweedy, in the obituary notice of his late master, written for THE LANCET, gave full expression to an intention to keep green the memory of a life-long and devoted student of science.

I am, Sir, yours faithfully,

Eastbourne, Jan. 14th, 1924. P. G. CAWLEY.

MEMORIAL TO THE LATE DR. WALLACE BEATTY.

To the Editor of THE LANCET.

SIR,—Past students and friends of the late Dr. Wallace Beatty may be interested to learn that a memorial fund has been opened at the Adelaide Hospital, Dublin, to perpetuate his memory. The hon. treasurer of the committee is Mr. W. Hogg, Fintragh, Shrewsbury-road, Dublin, by whom subscriptions will be gladly received.

I am, Sir, yours faithfully,

Dublin, Jan. 13th, 1924. W. G. HARVEY.

LIVERPOOL MEDICAL INSTITUTION.

To the Editor of THE LANCET.

SIR,—In your report of a paper read by me before this Institution on Dec. 20th, I am stated to have referred to the use of Hewitt's airway. This is not so. The airway I use is that designed by Mr. Blair Bell of Liverpool, a woodcut of which appeared in his text-book on gynæcology many years ago; this particular airway is shown in Dr. Silk's handbook on modern anæsthetics erroneously as Hewitt's. Mr. Blair Bell's latest modification is, I think, an improvement; it is made of copper, the metal tube being divided into five channels so that the respired air is in consequence kept at a higher temperature after the manner of the turbinate bones.

I am, Sir, yours faithfully,

Liverpool, Jan. 11th, 1924. H. H. L. PATCH.

Medical News.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—At a meeting of the Council held on Jan. 10th, Sir John Bland-Sutton, the President, in the chair, the undermentioned diplomas were conferred (in conjunction with the Royal College of Physicians of London) upon the following candidates:—

DIPLOMA IN PUBLIC HEALTH.

E. Benjamin, Bombay and King's Coll.; Florence Bentham, St. Mary's and King's Coll.; M. L. Bery, Manchester; F. J. Darbyshire, Westminster and Royal Inst. Public Health; May C. Ferguson, Dublin and Royal Inst. Public Health; J. M. Ghosh, Calcutta and Univ. Coll.; M. R. Goverdhan, Bombay and Royal Inst. Public Health; Eleanor Harse, Royal Free and Univ. Coll.; E. C. Holtom, Haslar and Univ. Coll.; I. Lewis, Univ. Coll.; R. C. Lightwood, King's Coll.; W. S. McGillivray, Aberdeen and Univ. Coll.; R. H. Parry, Middlesex; H. C. G. Pedler, Univ. Coll.; M. K. G. Pillai, London and Royal Inst. Public Health; Ruth W. Plimsoll, St. Mary's and Univ. Coll.; J. Reid, Cork and Royal Inst. Public Health; P. M. Rivaz, Durham and Royal Inst. Public Health; C. Ross, Glasgow; Effie F. A. Samter, Manchester and Univ. Coll.; N. S. Sethi, Punjab and Univ. Coll.; R. W. G. Stewart, Belfast and Naval Med. Sch., Greenwich; M. L. Sutcliffe, Univ. Coll.; I. S. Thomson, Aberdeen and Royal Inst. Public Health; J. R. Tibbles, Aberdeen and Univ. Coll.; J. Whitby, Middlesex and Royal Inst. Public Health; and S. A. Withers, Univ. Coll.

DIPLOMA IN TROPICAL MEDICINE AND HYGIENE.

Y. A. N. Barrada, P. N. Basu, M. G. Bhandari, H. Das, W. K. Dunscombe, A. A. Hearne, H. B. Lee, G. R. McRobert, P. S. Mills, W. L. Paterson, P. S. Slewyn-Clarke, T. S. Tirumurti, H. S. Watters, C. L. Wilmoth, and A. D. Wright. (All these candidates studied at the London School of Tropical Medicine.)

DIPLOMA IN PSYCHOLOGICAL MEDICINE.

D. R. Alexander, F. G. L. Barnes, J. D. Dyson, A. F. Grimbly, H. D. Hayes, W. J. Lascelles, D. B. M. Lothian, E. E. Pittman, and J. Roy.

DIPLOMA IN LARYNGOLOGY AND OTOLOGY.

J. B. Horgan and W. Wilson.

UNIVERSITY OF LONDON.—A course of three lectures on the Treatment of Contracted Pelvis will be given at the London (R.F.H.) School of Medicine for Women (Hunter-street, Brunswick-square, W.C.) by Dr. Gibbon Fitzgibbon, on Jan. 29th, 30th, and 31st. At the first lecture the chair will be taken by Dr. J. S. Fairbairn. A course of four lectures on Respiratory Exchanges will be given by Prof. Winifred Cullis at the same place on Jan. 24th and 31st, Feb. 7th and 14th, at 5 P.M. Attendance at this course is recognised in connexion with the B.Sc. (Honours) Degree in Physiology. Admission to all these lectures is free.

A NEW edition of Prof. Hugh MacLean's "Modern Methods in the Diagnosis and Treatment of Glycosuria and Diabetes" (Constable and Co.) is announced for early publication.

MANCHESTER CLINICAL SOCIETY.—A lecture will be given in the Medical School, University of Manchester, on Thursday, Jan. 24th, at 4.30 P.M., by Sir Thomas Horder, entitled Medicine and Old Ethics.

A MEMOIR of William and John Hunter, by George C. Peachey, to be published in February, will contain six portraits and a sketch of the early teaching of anatomy in England to 1746, and will throw new light upon William Hunter's association with the Society of Navy Surgeons and upon John Hunter's army career.

TUBERCULOSIS SOCIETY.—A meeting of this society will be held to-day, Friday, Jan. 18th, at the Margaret-street Hospital, Margaret-street, London, W. 1, at 8 P.M., when Dr. A. S. MacNalty will read a paper on Tuberculosis Work in England. After the paper the London County Council Scheme for Post-graduate Study for London Tuberculosis Officers will be discussed.

ROYAL SANITARY INSTITUTE.—An introductory lecture to this term's courses of lectures and demonstrations will be delivered by Dr. Charles Porter on Jan. 28th at 5.30 P.M. (admission free). The course for sanitary officers will be delivered on the 29th, that for meat and food inspectors on Feb. 8th, and the course for health visitors and child welfare workers on Feb. 4th. Further information can be obtained from the Director and Secretary, Mr. E. White Wallis, at the offices of the Institute, 90, Buckingham Palace-road, London, S.W. 1.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—During the month of February a four weeks' course in Children's Diseases will be given by the members of the staff at the four following institutions: Paddington Green Children's Hospital, Royal Waterloo Hospital for Children and Women, Victoria Hospital for Children, and the "Children's Clinic" at the Western General Dispensary. The course will embrace lectures and clinical demonstrations on Medical and Surgical Diseases of Children and also the special departments, including dermatology, nose and throat, diseases of the eye, and clinical laboratory demonstrations. As already announced, a special intensive course is being held at the North-East London Post-Graduate College, Prince of Wales's General Hospital, Tottenham, N. 15, from Feb. 4th to Feb. 16th. A special course in ophthalmology will be given at the Central London Ophthalmic Hospital, Judd-street, from Jan. 28th to Feb. 22nd. The course will consist of clinical lectures and demonstrations, and include the use of the ophthalmoscope, &c. Further particulars and copies of the syllabus for all these courses can be obtained from the Secretary to the Fellowship at No. 1, Wimpole-street, London, W. 1.

DONATIONS AND BEQUESTS.—The late Mr. George Frederick Milnthorp left by will £1000 to the Doncaster Royal Infirmary and Dispensary.—By will the late Mrs. Emily Gertrude Pye-Smith, widow of Dr. Philip Henry Pye-Smith, among other bequests, left £1000 to the Governors of Guy's Hospital to endow a bed to be called the "Dr. Pye-Smith Bed," and to the Royal College of Physicians her late husband's gold medals.—Under the will of the late Mr. William Thomas Rushton, the testator left, among other bequests, £250 each to the Queen's Hospital, Birmingham, and the Birmingham General Hospital; £200 each to the Birmingham Deaf and Dumb Institution; the General Institution for the Blind, Carpenter-road, Edgbaston; the Birmingham and Midland Ear and Throat Hospital; the Birmingham and Midland Hospital for Women; the Birmingham Eye Hospital; the Royal Orthopædic and Spinal Hospital; £100 each to the Birmingham Dental Hospital; the Birmingham and District Cripples Union; the Women's Hospital, Birmingham; the Birmingham Maternity Hospital; the Taylor Memorial Home of Rest, Sparkhill, Birmingham; the Bromsgrove Cottage Hospital; the Blackwell Sanatorium; and St. Dunstan's Home for Blinded Soldiers, London.

LECTURES on (1) Headache, (2) Rheumatism, (3) Gout, and (4) Obesity will be delivered by Sir Robert Armstrong-Jones at Gresham College, Basinghall-street, London, E.C., on Jan. 29th, 30th, 31st, and Feb. 1st respectively at 6 P.M. Admission is free.

IN the recent New Year Honours Dr. Alexander Hendry, M.V.O., of Ballater, was created a Commander of the Royal Victorian Order. Dr. Hendry is well known in Upper Deeside as a successful medical practitioner and also represents that district in the Aberdeenshire Education Authority. He is also a justice of the peace for the county and a member of the Deeside District Licensing Court.

KINGSEAT MENTAL HOSPITAL.—The Aberdeen City District Board of Control met on Jan. 8th to discuss the proposed extension of the hospital. Mr. Thomas Mitchell presided. Approval was given to erect additional villas at Kingseat Asylum and increased accommodation in the nurses' home. The estimate of cost was £43,000—the sketch of the plans suggested by the consulting architect to be first brought before the district board for adoption.

MEDICAL PRAYER UNION.—A meeting will be held at the London (R.F.H.) School of Medicine for Women, Hunter-street, Brunswick-square, London, W.C., on Jan. 24th. The Medical School will be open for inspection at 4.30 P.M. and the meeting will begin at 5.30 P.M., when an address will be given by Dr. Douglas Adam. Those who intend to be present are asked to inform Dr. Tom Jays, the Hon. Secretary, Livingstone College, Leyton, E. 10.

PUBLIC DENTAL SERVICE ASSOCIATION.—The first annual dinner of the East Lancashire and East Cheshire Branch of this Association was held recently in Manchester. The chairman, Mr. P. I. Wigoder, said that it was estimated that from 20 to 40 per cent. of the children attending school were suffering from grave dental defects, and that 70 per cent. needed some dental treatment. In Manchester only four school clinics had been established instead of the 18 originally proposed. It was, however, with the question of adult dental disease that the Association was chiefly concerned, as it was estimated that half of the ill-health of the industrial classes was due, directly or indirectly, to defective teeth. At present the Association could only cope with this problem by coöperating with the approved societies who were making provision for dental treatment out of their surplus funds. The members of the Association were prepared to give their services to the societies on an agreed scale of remuneration. Mr. Walter Davies, chairman of the Manchester Insurance Committee, expressed the opinion that the State would never secure the measure of public health it aimed at until it made provision for using the services of dentists as it had made for using the services of the doctors. Provision for dental treatment at present could only be made by approved societies out of their surplus funds. It was hoped that at no distant date dental treatment would be included as one of the general benefits under the Act. This would mean that in Manchester half the population would be placed automatically in the hands of the dentists.

EDUCATIONAL TOURS FOR MEDICAL OFFICIALS.—By request of the Ministry of Health, the Society of Medical Officers of Health has undertaken the selection of representatives from the United Kingdom to take part in the interchanges of health officers organised by the Health Section of the League of Nations. For a course in general health administration to be held in the Netherlands (April 24th–May 30th) the Society has nominated Dr. A. T. Nankivell, M.O.H. of Hornsey, and Dr. T. S. McIntosh, M.O.H. of the Hendon Urban District. For a similar course in Denmark (June 1st–July 14th) the British representatives will be Dr. F. T. H. Wood, M.O.H. of Bootle, and a medical officer of the Ministry of Health. A third course in general health administration to be held in Switzerland (August 10th–Sept. 20th) will be attended by Dr. A. B. McMaster, M.O.H. of Dover, and Dr. W. H. Davison, Assistant M.O.H. of Birmingham. The Society has also nominated Dr. W. H. Dickinson, of the Newcastle-on-Tyne Health Department, for a course in anti-tuberculosis work to be held in Austria, France, Hungary, Belgium, Switzerland, and other European countries from February 6th to April 30th. Dr. Raymond Gamlin, senior assistant school medical officer at Liverpool, has been selected for a European course in school medical work the dates for which are not yet fixed. All these nominations are subject to the consent of local authorities to grant the necessary leave of absence. The Health Section of the League of Nations is enabled to defray the expenses of the courses by a generous grant from the Rockefeller Trustees.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear it if reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY, Burlington House, Piccadilly, W.
THURSDAY, Jan. 24th, at 4.30 P.M.—*Papers to be read:*—H. G. Cannon: On the Development of an Estherid Crustacean. (Communicated by Prof. E. W. MacBride.)
Papers to be read in title only:—C. Shearer: The Oxygen Consumption Rate of Parts of the Chick Embryo and Fragments of the Earthworm. N. Annandale, D.Sc.: The Evolution of the Shell-Sculpture in Freshwater Snails of the Family Viviparidæ. (Communicated by Lieut.-Colonel A. Alcock.) Prof. B. Sahni: *Tmesipteris Vieillardi* Dangeard. An erect Terrestrial species from New Caledonia. (Communicated by Prof. A. C. Seward.) P. A. Buxton: Heat, Moisture, and Animal Life in Deserts. (Communicated by Prof. J. S. Gardiner.) A. W. Bellamy and Prof. C. M. Child: Susceptibility in Amphibian Development. (Communicated by Prof. E. W. MacBride.)

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Monday, Jan. 21st.

SPECIAL DISCUSSION: at 5 P.M.
On the Grading of the Population from the Point of View of Bodily Fitness, to be opened by Air-Commodore David Munro, R.A.F., followed by Sir Arthur Keith, Sir Duncan Rhind, Dr. John Wallace, and others.

Wednesday, Jan. 23rd.

COMPARATIVE MEDICINE: at 5 P.M.
Paper:
Prof. E. Mellanby: Diseases of Nutrition in Animals. The paper will be followed by a discussion, in which the following will take part: Prof. J. B. Buxton, Miss Harriette Chick, Mr. Henry Gray, Mr. G. H. Livesey, Prof. C. J. Martin, and Prof. M. S. Pembrey.

Friday, Jan. 25th.

STUDY OF DISEASE IN CHILDREN: at 5 P.M. (Cases at 4.30 P.M.)
Cases:
Dr. Geoffrey Evans: Case of Interstitial Nephritis in a Child.
Dr. C. Worster-Drought: Juvenile Tabes Dorsalis in a girl aged 10 years.
Dr. W. M. Feldman: Case for Diagnosis.
Mr. O. L. Addison: Specimen (the Spleen) of a Case of "Gaucher Splenomegaly."
Other cases will be shown.

EPIDEMIOLOGY AND STATE MEDICINE: at 8 P.M.
Paper:
Dr. J. Kerr: Refuse Disposal in Relation to the Enteric Group of Diseases.

ROYAL INSTITUTION OF GREAT BRITAIN, 21, Albemarle-street, W. 1.
TUESDAY, Jan. 22nd.—5.15 P.M., Dr. W. E. Dixon: Drug Addictions. (Lecture II.)

ROYAL INSTITUTE OF PUBLIC HEALTH, 37, Russell-square, W.C.
WEDNESDAY, Jan. 23rd.—4 P.M., Dr. G. L. Cox: Organisation of County Schemes for Prevention of Tuberculosis.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.
MONDAY, Jan. 21st to FRIDAY, Jan. 25th.—NORTH-EASTERN FEVER HOSPITAL. Wed. and Sat., 11 A.M., Dr. Frederic Thomson: Diagnosis and Treatment of the Acute Infectious Diseases.—ST. PETER'S HOSPITAL FOR STONE. Mon., 2 P.M., Mr. Andrews: Injuries of the Urinary Organs: Tues., 2 P.M., Mr. Joly: Urinary Calculi and Calculous Disease; Wed., 2 P.M., Mr. Morson: Tumours of the Urinary Tract; Thurs., 2 P.M., Mr. F. J. F. Barrington: Non-tuberculous Infections of the Urinary Tract; Fri., 2 P.M., Sir John Thomson-Walker: Urinary Obstruction; Sat., 2 P.M., Mr. Harkness: Urethritis in the Male.—WEST END HOSPITAL FOR NERVOUS DISEASES, at 73, Welbeck-street, W. 1. Mon., 1.30 P.M., Dr. Harry Campbell: Cerebral Tumour, Hemiplegia; Tues., 5 P.M., Dr. Ridley Prentice: The Significance of Absent Knee- and Ankle-Jerks; Fri., 5 P.M., Dr. C. Worster-Drought: Neurosyphilis, Diagnosis and Treatment.

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn-fields, W.C.
MONDAY, Jan. 21st.—5 P.M., Prof. St. Leger Brockman: The Problem of Drainage in Acute Appendicitis.
WEDNESDAY.—5 P.M., Prof. R. Handfield-Jones: Retro-peritoneal Cysts, their Pathology, Diagnoses, and Treatment.
FRIDAY.—5 P.M., Prof. S. Forsdike: Cancer of the Cervix.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.
MONDAY, Jan. 21st.—10 A.M., Mr. Maingot: Surgical Pathology. 12 noon, Mr. Simmonds: Applied Anatomy. 2 P.M., Mr. Simson: Diseases of Women.
TUESDAY.—12 noon, Dr. Burrell: Chest Cases. 2 P.M., Mr. Sinclair: Surgical Out-patients. 2.30 P.M., Mr. Tyrrell Gray: Surgical Wards.
WEDNESDAY.—10 A.M., Dr. Saunders: Medical Diseases of Children. 12.15 P.M., Dr. Burnford: Medical Pathology. 2.30 P.M., Mr. Donald Armour: Surgical Wards.
THURSDAY.—10 A.M., Dr. Grainger Stewart: Neurological Dept. 2 P.M., Dr. Scott Pinchin: Medical Out-patients. 2 P.M., Mr. MacDonald: Genito-Urinary Dept.
FRIDAY.—10.30 A.M., Dr. Pritchard: Medical Wards. 12 noon, Mr. Endean: Venereal Diseases. 2 P.M., Mr. Banks-Davis: Throat, Nose and Ear Dept.
SATURDAY.—9.30 A.M., Dr. Burnford: Bacterial Therapy. 10 A.M., Dr. Saunders: Medical Diseases of Children. 10 A.M., Mr. Banks-Davis: Operations on Throat, Nose and Ear.
Daily, 10 A.M. to 6 P.M., Saturdays, 10 A.M. to 1 P.M., In-patients, Out-patients, Operations, Special Departments.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.
THURSDAY, Jan. 24th.—4 P.M., Dr. Nabarro: Cerebro-spinal Fluid and its Value in Diagnosis.

QUEEN CHARLOTTE'S LYING-IN HOSPITAL, Marylebone-road, N.W.
THURSDAY, Jan. 24th.—5 P.M., Mr. Banister: Late Manifestations of Puerperal Sepsis.

CANCER HOSPITAL, Kensington, S.W.
WEDNESDAY, Jan. 23rd.—4.30 P.M., Mr. C. Rowntree: Radium and its Surgical Uses.

ST. JOHN'S HOSPITAL, 49, Leicester-square, W.C.
TUESDAY, Jan. 22nd.—5 P.M., Dr. H. Davis: Dermatitis Artefacta.
THURSDAY.—5 P.M., Dr. H. MacCormac: Animal Parasites (Chesterfield Lecture).

ST. MARY'S HOSPITALS, MANCHESTER, POST-GRADUATE LECTURES (at Whitworth-street West Branch).
FRIDAY, Jan. 25th.—4.30 P.M., Mr. Morley: Pyloric Stenosis in Infancy.

UNIVERSITY OF LIVERPOOL POST-GRADUATE LECTURES. (At 3.30 P.M.)
MONDAY, Jan. 21st.—(At the Children's Hospital.) Mr. Leathart: Reasons for Removal of Tonsils and Adenoids.
TUESDAY.—(At the Southern Hospital.) Dr. Frank H. Barendt: Scaly Eruptions.
WEDNESDAY.—(At the Northern Hospital.) Dr. Pemberton: Treatment of Diabetes Mellitus.
THURSDAY.—(At the Stanley Hospital.) Dr. Wadsworth: Artificial Pneumothorax.
FRIDAY.—(At the Royal Infirmary.) Prof. Glynn: Some Points in Clinical Pathology.

UNIVERSITY OF SHEFFIELD POST-GRADUATE LECTURES.
FRIDAY, Jan. 25th.—3.30 P.M. (At the Royal Infirmary.) Dr. Yates: Psychotherapy.

Appointments.

BLACKABY, E. J., M.R.C.S., L.R.C.P. Lond., has been appointed House Surgeon to the Royal Infirmary, Sunderland.
COUNIHAN, J. H., M.B., B.Ch. Dub., Coroner for North County Clare.
COUTTS, N. M., M.B., B.S. Lond., House Surgeon, Children's Hospital, Sunderland.
FORD, R. K., M.B., B.S. Lond., Medical Officer of the Poor-law Institution and Infirmary and the Children's Homes, Darlington.
FORWARD, F. E., F.R.C.S. Eng., Medical Officer of Parkhurst Prison.
GRANT, MARJORIE, M.B., Ch.B. Manch., and KING, MARJORIE, M.B., Ch.B. Edin., Assistant School Medical Officers for Cheshire.
JOHNSON, W. P. S., M.D., Ch.B. Edin., Medical Officer to the County of Fife Venereal Diseases Joint Committee.
WOOD, J. W., M.B., Ch.B. Aberd., Honorary Aural Surgeon to the Eye and Ear Hospital, Tunbridge Wells.
Certifying Surgeons under the Factory and Workshop Acts: RAYNER, E. C., M.R.C.S., L.R.C.P. Lond. (Dulverton); COURTNEY, J. M., M.R.C.S., L.R.C.P. Lond. (Lynton); and SMITH, C. R., M.B., B.S. Durh. (Beccles).

Vacancies.

For further information refer to the advertisement columns.

Birmingham, Queen's Hospital.—P. to Out-patients. £50.
Birmingham Union, Dudley-road Hospital.—Res. P. £650. Also Res. Asst. M.O. £300.
Bolton Infirmary and Dispensary.—Asst. H.S. £100.
Cheshire Joint Sanatorium, Market Drayton, Salop.—Second Asst. M.O. £350.

Chester Royal Infirmary.—Asst. H.S. £150.
City of London Hospital for Diseases of the Heart and Lungs, Victoria Park, E.—H.P. £125.
Elizabeth Garrett Anderson Hospital, Euston-road.—Asst. to Clin. Pathologist. £100.
Gloucester, Gloucestershire Royal Infirmary and Eye Institution.—H.S. £175.
Hayward's Heath Hospital.—Hon. Consulting P.
Hemel Hempstead, West Herts Hospital.—R.M.O. £200.
Hospital for Sick Children, Great Ormond-street, W.C.—Cas. O. Also Asst. Pathologist. Each £400.
Hull Royal Infirmary.—Sen. H.S. £200.
Laboratories of Pathology and Public Health, 6, Harley-street, W.—Fourth Asst. Pathologist. £500.
Lancashire County Mental Hospital, Winwick, Warrington.—A.M.O. £432.
Liverpool, Royal Southern Hospital.—Res. Cas. O. £150. Also H.P.'s and H.S.'s. Each £100.
London Lock Hospitals, 283, Harrow-road, W. 9, and 91, Dean-street, W. 1.—Hon. Ophth. S.
Manchester, Royal Children's Hospital, Gartside-street—Asst. M.O. £150.
Manchester Royal Eye Hospital.—H.S.
Manchester Royal Infirmary.—Asst. M.O. in Radiological Dept. £105.
Miller General Hospital for South-East London, Greenwich-road, S.E. 10.—H.P. £150.
Orkney, Parish of Eday.—M.O.
Orpington, Kent, Ministry of Pensions Hospital.—Consultant P. £450.
Penshurst, Kent, Cassel Hospital for Functional Nervous Disorders. Res. M.O. £500.
Plaistow Fever Hospital.—Second Asst. M.O. £200.
Royal Army Medical Corps.—Commissions.
St. Thomas's Hospital Medical School.—Demonstrator of Anatomy. £400.
Salisbury General Infirmary.—Asst. H.S. £150.
Sheffield Royal Hospital.—Cas. O. £150.
South London Hospital for Women, South Side, Clapham Common, S.W. 4.—Asst. S.

The Chief Inspector of Factories, Home Office, London, S.W., announces vacancies at Epsom, Harpenden, and Coniston.

Births, Marriages, and Deaths.

BIRTHS.

BANKS.—On Jan. 8th, at Ty Mawr, Aberdare, the wife of Harry Banks, F.R.C.S., of a daughter.
HODGES.—On Jan. 13th, at Boscombe Court, Boscombe, Hants, the wife of Arthur Noel Hodges, M.D., of a daughter.
WILSON.—On Jan. 6th, at "Stonefield," Blackheath, the wife of Captain Colin Wilson, R.A.M.C., of a daughter.

DEATHS.

LATIMER.—On Jan. 10th, at Oakdale-road, Tunbridge Wells, Henry Arthur Latimer, M.D. (late of Swansea, South Wales), in his 75th year.
MARTIN.—On Jan. 9th, following an operation at a nursing home in London, Henry J. W. Martin, M.R.C.S. Eng., aged 68.
ROPER.—On Jan. 11th, at The Shrubbery, Exeter, of pneumonia, Arthur Charles Roper, F.R.C.S. Edin., J.P., aged 65.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

INDEX TO "THE LANCET," VOL. II., 1923.

THE Index and Title-page to Vol. II., 1923, which was completed with the issue of Dec. 29th, will shortly be published. A copy will be sent gratis to subscribers on receipt of a post-card addressed to the Manager of THE LANCET, 1, Bedford-street, Strand, W.C. 2.

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Notes, Comments, and Abstracts.

THE USE AND ABUSE OF PHYSICAL TREATMENT.[1]

BY JAMES B. MENNELL, M.D., B.C. CAMB.

IN its early days, some 25 years ago, the Chartered Society of Massage and Medical Gymnastics was known as the Incorporated Society of Trained Masseuses. To give an idea of the uphill fight of physical treatment in this country, I may say that 15 years ago, when I first began to take an active interest in the subject, a deputation of my fellow house officers at hospital waited upon me to request me not to degrade my profession by studying such a very doubtful branch of medical practice. It seemed then that the best I could hope for our generation was that we should sow the ground for others to reap the harvest, but our work has advanced so rapidly in recent years that I still hope to see physical treatment fully established in the prominent position in the medical armamentarium which it seems to me it should hold. The formation of each of these lecture centres marks a definite step forward in the progress of physical treatment, and I think that nothing can now undo the work of the past.

The uses of physical treatment are, I think, fairly universally admitted, though unfortunately the variety of its uses are still unknown, and still less are its abuses known and realised. Those of us who practise physical treatment are mainly regarded as a last resource; patients come to us when every other known means of helping them has failed, to find, even after suffering pain and disability for 20 years, that in physical treatment they are able to secure relief.

Massage as a Curative Agency.

It seems to me futile to try to trace the history of massage back into antiquity; there can be little doubt that the first occasion on which massage was applied to a human limb was the day on which our earliest ancestor began laborious work. Massage is, to all intents and purposes, instinctive, not only throughout the human race, but also in a large section of the animal kingdom. Yet I think that the more thoughtful of us realise that the more we see of the use of massage, the less we come to rely on it alone as a curative agency. I do not wish to appear to belittle the value of massage; but it should be used largely as a means to an end, and preferably at the beginning of treatment. Many people labour under the delusion that they possess a supernatural power of healing in their hands; to me this conception is utter balderdash, long experience leading me to regard such people as the most unreliable of the members of their profession.

Putting aside the obvious dangers which beset every masseur, such as the request for massage in cases of malignant growth, or where thrombosis has occurred, one other danger—psychical, not physical—is all too little realised. It is far easier to rub a disability into a patient's mind than to rub it out of his limb. If 10 minutes' massage is necessary, and 20 minutes' massage is given, surely we convey to the patient's mind the undesirable suggestion that the condition is 100 per cent. more serious than in fact it is.

One masseuse to be avoided, then, is the one who prides herself on giving her full hour of massage to every case; another is the one who sits down and works automatically, with her thoughts obviously not on her work. The proficient masseuse should be able at any moment to give a reasoned and intelligent reply to the question, "What are you doing that for, how often have you done it, and how often do you propose to do it in order to secure the fullest physiological result?" This may be an unattainable ideal, but physical treatment must not be blamed for failure to effect a cure if, through lack of adequate instruction, the masseuse is left in ignorance of the exact condition she is called upon to treat. Neither by training, nor, as a rule, by experience, is she a diagnostician.

Instances of Conditions Unaffected by Massage.

In a case of pain in the lower extremity due to sacro-iliac or to lumbo-sacral strain, only by the mercy of Providence can massage possibly be of any service. In brachial neuritis, if the pain is due to reflex irritation from fibrositic deposits round the scapula or to adhesions within the shoulder-joint, physical treatment applied to the arm is not only useless, but liable to increase, rather than decrease, the irritation. It is a comparatively simple matter to explain the massage

[1] An abstract of a lecture delivered on Nov. 20th, 1923, at the opening of the Lecture Centre of the Chartered Society of Massage and Medical Gymnastics at Eastbourne.

treatment of any individual case to any reasonably intelligent and skilled individual, but it requires a very unusual amount of both skill and experience to be able to prescribe the correct form of treatment for every case.

Massage treatment may be rendered not only futile, but definitely harmful; not infrequently, more harm than good is done by this treatment in cases of infantile paralysis and other forms of flaccid paralysis. A common phrase, long used amongst those who practise massage, is that of "working up a muscle"—which means, presumably, that as a direct result of massage treatment, muscle strength can be built up. In my opinion the latter possibility is a mere delusion, probably arising from the following type of case: A patient after, say, a severe attack of typhoid, may have very considerable wasting of the muscles; massage is ordered, and activity may shortly seem to return, with increase of muscle bulk. I submit that this increase of muscle is a secondary, not a primary, result. The massage produces a sense of well-being and returned vitality; the resulting desire for spontaneous movement enables the patient to start along the path of recuperation, but I am convinced that no strength was ever built up as the direct result of massage. Massage assists the circulation in the removal of waste products, and maintains it through the part, but cannot possibly secure one single voluntary contraction.

In the cases of nerve injury encountered in such numbers during the war, some of the nerve operations were complete failures in every respect. Recovery was not only delayed, but also permanently impossible to effect by physical or any other means. Yet amongst cases where nerve suture was successful were some presenting an apparently amazing rapidity of recovery; other cases are recorded where recovery has been regarded as so hopeless that a tendon transplantation has been performed, whilst a few weeks later muscle recovery has taken place in the paralysed muscle. I believe, however, that one of the curses attendant upon those who suffer from a flaccid paralysis is the somewhat widespread belief—amongst those who practise physical treatment and others—that voluntary action in a paralysed muscle cannot be secured until a faradic response can be elicited. I am absolutely convinced in my own mind of the fallacy of this belief, but it generally holds good if the person to whom the care of the patient is entrusted is not expert in muscle training; for a psychical block to voluntary impulses, no less than a physical obstruction, can exist in a nerve connexion.

Muscle Training.

Muscle training is an art apart; it calls for an intimate knowledge of anatomy, and of muscle function, which is quite another subject. The prime mover must be held distinct from the synergist—direct or static, and the action of the antagonists must be fully known. Then, too, there are some dozen laws to be regarded in all muscle training, and neglect of one transforms success into failure. It is perhaps in muscle training that expert skill shows itself more plainly than in any other branch of physical treatment, except perhaps in the treatment of the more serious cases of recent injury.

Following on the same line of thought it is, of course, a matter of common knowledge that the apparent paralysis present after an attack of infantile paralysis is far more extensive than is justified by the actual lesion. Nearly always is it possible to hope for some recovery when the patient is seen for the first time; yet of this I am sure, that a certain amount of recovery, though possible, only too often fails to take place merely because the paralysis still continues to exist in the patient's mind. He who holds the faith that massage can "work up a muscle," or that electrical stimulation of a muscle is going to cure his patient, places his faith in a broken reed, and perhaps the greatest danger in electrical treatment of a muscle is that it may enforce upon the patient's mind the idea that his muscle can only move in response to electrical stimulation. When we remember that the earliest contractions can only be elicited in certain positions and under certain circumstances, I think it is possible to realise how recovery can be postponed, not only through lack of physical treatment, but perhaps directly because of lack of skill in the administration thereof.

The surgeon can render recovery possible, but the recovery in the end depends on the patient and his own volition.

Then let us consider the treatment of a patient after injury or operation. To some, perhaps, I am known as the English disciple of Just Lucas-Championnière; I have probably been responsible for the treatment of 500 or 600 cases of fracture of the lower end of the humerus in children; in all of them I have used massage and mobilisation from the very outset, and never since the earliest days have I had cause to regret it. Yet throughout this country and in America the general belief is that this fracture should not be so treated. Lack of knowledge of manipulative dexterity and technique is the basis on which this belief is built. I was once complimented by an eminent surgeon on the "moral control" that I had over the children who had sustained fracture, and who were receiving treatment in my department; I pointed out that what he had witnessed was the result of manipulative dexterity on the part of my staff.

With regard to the treatment of children with fractures near the elbow-joint, if such treatment is painful the patient is suffering from abuse, not from use, of treatment. Rarely, if ever, do I allow massage of any sort to be administered to these patients after the first few days; and, as regards mobilisation, any movement administered during the first two weeks must be passive in the true sense of the word—in other words, it must be administered only while the muscles throughout the limb are in a condition of complete relaxation.

In a vast number of cases physical treatment is applied and found wanting. In those complaints, known variously as brachial neuritis, lumbago, and sciatica, physical treatment is often meted out as a last resource; massage is applied, and often the patient is worse as a result. Ionization is given, or perhaps diathermy, radiant heat, or light treatment, and the patient is comforted but not cured. Yet physical treatment properly applied is frequently the one and only curative agency. The more I see of these cases the less I believe in the existence as a general rule of a true neuritis. Do not think for one moment that I deny the existence of a true sciatica; I am sure, however, that it is a condition very rare when compared with others capable of producing the most intense pain along the course of any nerve in the lower extremity. The one cardinal sign of true sciatica—namely, pain when the hip is flexed upon the trunk and the knee extended—is accepted as diagnostic if pain is produced; bad luck has it that this, too, is one of the cardinal signs of a far more common condition often producing nearly identical symptoms—namely, sacro-iliac strain. Is it any wonder, therefore, that physical treatment for sciatica and lumbago fails us when the only possible hope of cure or even of relief rests either in manipulation of the joint or in affording it support with a belt?

Fibrositic Deposits causing Sciatica or Neuritis.

Another fertile source of so-called sciatica or neuritis is the presence of fibrositic deposits, capable of causing the most intense reflex irritation along the course of various nerve trunks. We know little enough about these fibrositic indurations, but of their existence I am absolutely firmly convinced. I am slowly coming to realise that in certain positions these deposits are capable of causing referred pain down the course of definite nerve trunks. Such deposits are (very occasionally) found under the scalp, then in the occipital region, then at any point in the muscle mass between the cervical spinous processes and the transverse processes and, less frequently, just in front of the transverse processes. Here, however, I would add one word of warning. It has often been my lot to be told that a patient has an intensely sensitive spot which no amount of friction has succeeded in dispersing, and on examination this has not surprised me, as I know of no means by which the tubercles of the transverse processes of the vertebræ can be removed short of operation. Then there are two favourite spots for these deposits around the scapula. One has been mentioned, a second is to be found by placing the hand of the affected side upon the opposite shoulder, and then pressing deeply against the chest wall just opposite the base of the spine of the scapula. They occur, too, in a most inaccessible position—namely, between the body of the scapula and the chest wall. Fortunately the condition is not very common, but when it does occur it is capable of producing the most intense pain throughout the upper extremity. It can only be dealt with by exerting deep pressure on the scapula against the chest wall, while the former, so to speak, is ground firmly against the latter. Then they can occur in both supra- and infra-spinatus about the level of the acromio-clavicular joint, but in this position they must not, of course, be confused with arthritis or strain of this joint. Passing down the arm, they are to be found, comparatively rarely however, near the insertion of the deltoid, the origin of brachialis anticus, in front of the condyles of the humerus, and I have often been told that one has been discovered on deep pressure on the outer side of the forearm near the head of the radius. I question the existence of this spot, as when I have examined it, it is one of the normally painful spots on deep pressure. Then we come to two more painful spots which are a fertile source of so-called "writer's cramp." One is a nodal thickening perhaps in, perhaps near, the median nerve about a hand's breadth above the wrist-joint, and the other, apparently a true fibrositic deposit, just distal to and slightly internal to the trapezium in the palm.

Returning to the trunk, one spot occurring with remarkable frequency in patients suffering from brachial neuritis is in the third intercostal space in front somewhere about the nipple line. Unless this is dealt with effectively many a

case of brachial neuritis will fail to clear up. Deposits capable of causing referred pain are also found anywhere along the line which represents the outer limit of the erector spinæ, and a particularly unenviable lot is that of the patient where one of these spots is discovered in the angle formed by this line and the lower border of the twelfth rib. I think you will frequently find that this is present in those patients who are able to start off for a walk without a twinge or flicker of pain, and who yet, after going a variable distance, begin to feel intense pain creeping on until they are compelled to sit down and rest after having traversed a comparatively short distance. Around the transverse processes of the first lumbar vertebra we are also liable to discover more of these deposits, though, curiously enough, it would seem that they are not very common in the remainder of the lumbar region until we come to the gluteal region already referred to. Again, it is common for me to be told that a painful spot has been discovered near the junction of the ilium with the sacrum, but experience has taught me that this is indicative of strain of the sacro-iliac joint. I believe deposits here to be very rare. In the gluteal region not only are deposits to be found round the crest of the ilium, but they are also frequently to be found on deep pressure over the edge of the great sacro-sciatic notch. Passing downwards they are comparatively rare until (why, I do not know) we reach the neighbourhood of the knee-joint where two spots can not infrequently be discovered on deep pressure between the heads of the gastrocnemius and the tibia. Occasionally one may be found in the sole of the foot, even if the patient presents no evidence whatever of flat-foot or other cause of strain or trauma. It is not uncommon, I believe, to consider that pain due to a traumatic metatarsalgia which presents pain on pressure can be cured by massage; the latter treatment may ease but can never cure. The moral of all this is simply that physical treatment rightly applied can be curative; wrongly applied, it is not only futile, but capable of inspiring in the patient's mind a feeling of despair which renders him completely incapable of enjoying a life which is so interwoven, apparently without hope, with pain and suffering.

Pain in the Feet.

It is customary to consider that a patient who complains of pain in the feet is making an undue fuss, but the patients who display the greatest gratitude are those whom I am able to relieve in this respect. Manipulation can sometimes do much, but either manipulation or massage can seldom do more than afford very transitory relief. The faradic footbath, on the other hand, is a definite remedial agent, and this, combined with a proper support (hard to secure unless you make it yourself), can, I believe, be relied upon to secure relief until the patient is sufficiently recovered to build up his own muscle strength, and so effect his own recovery. When actual deformity has taken place, it means the permanent use of adequate support. For some time past, however, I have come to the conclusion that unless there are definite arthritic changes in the intertarsal joints, no foot condition is so bad that pain in it cannot be relieved by purely physical means, which, of course, include support. On the other hand, if there is a definite arthritis in a joint such as the subastragaloid joint, as, for instance, after fracture of the os calcis, nothing but fixation of the joint can possibly relieve the pain.

Flat-Foot.

Putting aside the question of footgear, treatment by physical exercises is most commonly prescribed for flat-foot. Here failure in treatment is, I think, due to one of two causes. In the first place, no amount of massage or electrical treatment will ever succeed in loosening joints which have become stiff, for this is essentially the function of manipulative treatment; secondly, no amount of re-education of the muscles which support the arch of the foot can possibly prove effective if the stance and position of the feet in walking remain uncorrected. It is for this reason that I always tell my students that the most important muscle to educate in patients suffering from flat-feet is the quadriceps extensor. Teach your patient to stand with feet parallel and the knees braced back, and to walk with the feet parallel instead of everted, and the success of the other forms of treatment is comparatively certain; whereas, without this special training, failure, or at least relapse, is almost equally certain.

Joint Manipulation.

I believe that during the war a general order was issued prohibiting the manipulative treatment of stiff hands under an anæsthetic after septic gunshot wounds of the upper extremity. And yet we knew full well that these manipulations were being performed by a limited few with the utmost success, though, for the most part, the operation was attended by failure. The manipulative treatment of joints is a special art requiring special study and special skill in execution. With the solitary exception of the hip-joint, in few, if any, joints in the whole body is it impossible to perform some definite movement not ordinarily under the patient's voluntary control. Again, movements in joints are by no means always what they seem. Flexion of the finger, for instance, is not a hinge movement, but a gliding movement; with the proximal end of the lateral ligaments as centre and their distal insertion as radius the base of the phalanx describes a circle. If this circle is not described, and if flexion is performed without the sliding movement involved in the circular movement of the base of the phalanx round the head of the proximal bone, severe damage is inevitable.

Mobilisation Treatment.

Performed in the right way, mobilisation treatment may be a potent influence for good; performed in the wrong way it is equally potent for evil. This subject is, of course, mixed up with what is commonly known as the art of bone-setting, and the question arises, Is there, or is there not, anything whatever in the bone-setter's story of the "little bone" being out of place? The ordinary unqualified practitioner usually attributes pain in a joint to some definite displacement of the bones which enter into the formation of the joint, and claims that the relief which he is at times able to secure is due to a demonstrable reduction of the bony displacement. That minor displacements of bone do, in certain cases, exist, and do cause symptoms, I am firmly convinced. But it is possible, under certain circumstances, for a locking to take place within many of our joints, in spite of the fact that there is no discernible displacement. It is, as a rule, impossible that this locking should be overcome merely by the performance of the ordinary movements which take place in the joint; indeed, the forcible performance of these movements will often do harm rather than good. It is essential, therefore, if the manipulative treatment of joints is to be undertaken at all with any prospect of success, that the manipulator should be acquainted with those movements which take place at joints and which are not under the voluntary control of the patient, and that he should know how to perform them so as to ensure that any locking which may have taken place is undone before he attempts to force the ordinary movements of the joint that are under voluntary control.

Massage and Obstetrics.

Even in the unexpected field of the obstetrical department, physical treatment finds its place; it is becoming more and more recognised how advantageous it is for an infant to receive its natural food, at any rate during the earlier months of life. When, however, the supply is running low, we have not by any means universally recognised as yet that in massage we have perhaps the most potent agency of all for restoring the activities of the source of supply. Then, too, as in all medicine and surgery, the highest glory is attained on the preventive side; thus the practice of physical exercise treatment after confinement is valuable.

Massage in Functional Diseases of the Central Nervous System.

In organic disease of the central nervous system it is obvious that, for the most part, physical treatment is the only agency which can materially help, although it can do nothing to cure. In functional nervous disease, however, we have an entirely different story; it is difficult to imagine any treatment more pernicious than massage as a means for curing the hysteric—unless indeed it is used, or rather abused, by transforming it into a form of physical punishment. Surely to apply massage in these cases is simply to back up the conscious against the subconscious; whereas, of course, the only hope of success is the reverse process of backing up the subconscious against the conscious. Anything may be used as a means of conveying a curative suggestion, but massage should not be employed as a remedy for a mental condition. Yet there are three golden rules of treatment which, if they are observed, will render massage treatment for the neurasthenic by far the most potent agent we have at our disposal. They are quite simple: Any tender or hypersensitive point should receive attention last; all of the so-called stimulating movements of massage must be prohibited; otherwise, the nature of the movements performed is absolutely immaterial, provided that they are rhythmical. If these laws are faithfully obeyed, massage is the one sovereign cure for insomnia: disregard them and disaster must follow.

Other rules in the treatment of all cases of recent injury, and of other patients where function is to be restored, are these: If as a result of treatment there is any increase of pain, increase of swelling, or decrease of mobility, something has gone wrong, or too much has been done; whereas with decrease of pain, decrease of swelling, and increase of mobility the right road has been attained, and it is safe to proceed along it.

May I close by point'ng a moral? Physical treatment is expert work, and should be left only in expert hands if it is to be successful. Do not blame physical treatment if it fails when confided to the untrained practitioner; rather lay the blame at the door of those who, being so ignorant of physical treatment themselves, fail to recognise the high degree of skill which may be required to provide adequate treatment for any individual case. This skill can only be the outcome of prolonged training as a preliminary to experience and practice.

HEALTH SERVICE OF IRAQ (MESOPOTAMIA).

A REPORT by the High Commissioner (Major-General Sir Percy Z. Cox) on the administration and condition of the Iraq for the period from Oct. 1st, 1920, to March 31st, 1922, has been issued as a Parliamentary paper. In the section devoted to health service it is stated that certain dispensaries have been closed, and that the following institutions have been opened (or reopened): civil hospitals at Diwaniyah and Samawah, and civil dispensaries at Baghdad West, Hindiyah Barrage, and Fallujah. Nine British officers on the staff resigned during the period; one, Dr. A. C. Oldham (Ahwaz), died; and five were recruited. Two British nursing sisters resigned; one, Miss E. Kidd (Basrah), died; and 12 were recruited. Five local doctors resigned and eight joined the service. Many of these are part-time officials. Difficulty has always been experienced in getting local doctors to take whole-time appointments. This is due mainly to a shortage of qualified medical practitioners in the large towns, and partly to the disinclination of the Iraqi doctor (usually city bred) to leave his home and serve in an out-station. The institutions of the health service provide a total of 1539 beds for in-patients, in addition to which the railway hospitals provide 99. During the year ending March 31st, 1922, 18,926 in-patients were admitted, of whom 15,582 were discharged and 1223 died; 607,484 out-patients (old and new cases) were treated. The following infectious cases were notified during the year: cerebro-spinal meningitis, 26; plague, 137; small-pox, 475; typhus, 61; chicken-pox, 90; measles, 605; mumps, 92; tuberculosis (all kinds), 178; typhoid, 87. These figures, however, represent only a fraction of the cases, and are in the main confined to the large municipalities. It is extremely difficult to obtain satisfactory notification in face of the conservatism of the native, his dislike of the disinfection of his home, and other troubles entailed by the discovery of infectious disease therein. Tuberculosis is notified much more freely than other diseases. Measles assumed epidemic proportions during the first half of the year, but after May gradually subsided. A small outbreak of plague occurred in May, June, and July. Small-pox became epidemic in the second half of the year. The majority of the cases were notified in Baghdad and Basrah, but the disease was much more widely spread throughout the country than indicated by the figures. The epidemic reached its summit in the first half of December, after which the figures dropped suddenly. Cholera has been notable by its absence, and there have been very few cases of typhus and relapsing fever.

The X Ray Institute, Baghdad, is the central radiographic institution of the country, and is also the depôt for supplies and repairs to all civil and military X ray installations. It is fully equipped with the latest radiographic and electrotherapeutic apparatus. A branch institute has been established at the Civil Hospital, Basrah. Arrangements have also been made to open another branch at Mosul. The work of the Vaccine Lymph Institute, Amarah, proceeded uneventfully. During the year 14,513 grammes of lymph (sufficient for 2,902,600 insertions) were manufactured and 7235 grammes issued. With this increased production it has become possible to keep in stock lymph of recent manufacture only, and lymph is now discarded as soon as it is 12 months old. The work of the laboratory of the Chemical Examiner's Department has continued at a high standard. The equipment is now complete and up to date; 376 samples were received for analysis, as compared with 313 in the previous year. The proportion of military work has decreased to about a tenth of the total. The laboratory is proving to be of considerable value to other departments, notably railway and excise. The Public Works Department is also beginning to refer to the chemical examiner for help and advice in such matters as concretes, cements, &c. Although the Rabies Institute at Baghdad is at present a military institution, it cannot be passed over without notice. Resulting from negotiations between the Director of Health Services and Government of India and the Assistant Director of Pathology, General Headquarters, Iraq, the institution commenced work in July, 1921; 159 cases have since been sent to the institute for treatment. Of these, 137 underwent the full course. One refused treatment, and in other instances treatment was not considered necessary. The presence of the institute in Iraq has resulted in an average monthly saving in passages alone of about Rs.3500, in so far as civilians are concerned, in view of the fact that previously all cases had to be sent to Kasauli, India.

For medical arrangements the railway system is divided into two sections, one extending from Makinah to Diwaniyah, and the other from Diwaniyah upwards, each being under a separate railway medical officer, and the whole being under the control of the chief railway medical officer at Baghdad. Railway dispensaries have been established at Makinah and nine other centres. During the early part of the period under review the treatment of railway employees was partly dependent on military hospitals. This dependence on the military has been gradually eliminated with the development of the Railway Medical Department, and during the latter part of the year, with the coöperation of the civil hospitals, attendances at or admissions to military hospitals have ceased. All sick now among railway employees, who cannot be treated at railway dispensaries, are received into civil hospitals, and practically the only patients dealt with by military hospitals are those requiring evacuation to India on medical grounds by ambulance transport. Owing to the large reduction in the imported railway personnel, the number of patients has considerably diminished, so that the pressure on civil hospitals has been much lessened, and this is noticeably so now, with the establishment of a new railway hospital at Baghdad West.

Up to a certain period the Iraq levies depended on the Civil Health Service for medical treatment, but on the reorganisation of the force a new Levy Medical Service was instituted under the control of Director of Health Services, with S.M.O. (who is also Assistant Director of Health Services), two R.A.M.C. inspecting officers, two assistant surgeons, eight sub-assistant surgeons, and two dressers on loan from military. In addition to this trained personnel, subordinate medical orderlies were supplied by levies. Instruction in medical and sanitary duties has been carried out. Now all the posts are provided with facilities for treatment to a finish, and for supervision by a British medical officer. Stations in Mosul, Arbil, Kirkuk, and Sulaimani took over the medical equipment left by the military, while small detention hospitals were instituted at Khanagin, Baghdad, Diwaniyah, Samawah, and Nasiriyah. The Civil Medical Stores supply medical equipment, and the Civil Health Service place their hospitals at the disposal of levies for the treatment of severe cases. The civil surgeon, Kirkuk, and civil surgeon, Sulaimani, officiate as levies medical officers, in addition to their other duties.

At the beginning of 1921 the Health Service transport consisted of two launches, five touring cars, 12 ambulances, and ten vanettes. Some of these were not in good order, having been running continually for two or three years. Running repairs were high, and the services of good drivers were difficult to obtain. Early in the year a reduction of four touring cars was effected, while the number of vanettes on actual duty was reduced to five, the rest being dismantled. Since then every effort has been made to utilise slow transport where possible; but it would seem that the present establishment is necessary for moderate efficiency.

HEALTH CONDITIONS IN TOGOLAND (WEST AFRICA).

A REPORT, prepared by Captain E. T. Mansfield, District Commissioner and Record Officer, on the British Mandated Sphere of Togoland for the year 1922, has been received at the Colonial Office. Amongst other interesting items it contains the following: "It is worthy of comment how eagerly the natives are seeking the aid of European medicine, and the long distances from which some of the patients travel to obtain it. . . . Native chiefs have instructions to report all cases of serious or infectious diseases without delay. This system has been proved very satisfactory by the fact that an outbreak of small-pox was immediately reported on a cocoa trade-route, and that, therefore, the possible beginning of an epidemic was controlled at its outset by the sanitary department and practically confined to one village. Medical attendance is given free to all paupers who care to apply for it, and for a nominal fee of 1s. to people of the labouring classes, whilst those who are known to be fairly well off are expected to pay higher fees. The medical officer performs a monthly tour through the districts. The most important diseases locally are venereal; the cases thereof treated during the year very easily outnumbered all others. Malaria and helminthiasis come next in importance and are very common; otherwise, except for injuries, many of which would be of a trivial nature if the natives possessed the most elementary ideas of sepsis, the local inhabitants appear to be fairly healthy on the whole. Sleeping sickness is met with, but is extremely rare, and leprosy also is not common. . . . There is no professional prostitution in the territory, the reason for this being that the morals of the people are so lax that what amounts to practically promiscuous fornication is so common that there is no room for such a class. It is quite a recognised business among a

certain section of the women, who go off to large centres to amass affluence in order to buy finery. A large number of the women from the southern section of the area frequent the brothels in Lome, which, it is understood, were in the past recognised and supervised by the German authorities, and have now been reintroduced by the French. Brothels are not recognised in British territories. No stigma appears to be attached to the profession. The whole subject of immorality and its attending diseases is of the utmost importance to the whole of West Africa, as it is one of the most potent factors limiting the increase of the population. . . . Restrictions on the importation and increase in the cost of alcohol have been the causes of inducing the inhabitants to resort to the excessive consumption of palm wine in the pine-growing areas. There are no other locally manufactured alcoholic liquors, except in the northern territories, where a quantity of corn beer is prepared. . . . The measures taken to assure the regulation and control of the importation, production, and consumption of dangerous drugs are prescribed by Rule 31 of 1921 under the Opium Ordinance of the Gold Coast Colony: 'Every application for the export to an importer of a supply of opium shall be accompanied by a certificate signed by the P.M.O. of the Gold Coast that the import of the consignment in question is approved by him, and is required for legitimate purposes. In the case of medicinal opium, morphine, heroine, and similar drugs, the certificate shall state specifically that they are required solely for medicinal or scientific purposes.' . . . Survivals of domestic slavery are still met with in the remote parts of the country, but it is impossible to furnish statistics, owing to the careful measures adopted by the slaves themselves and their masters to conceal their correct status. It must, however, be remembered that the state of slavery does not entail that character of servility which arises in the ordinary sense of the word. . . . Full liberty of conscience and unrestrained exercise of all forms of worship, which are consistent with public order and good morals, are permitted. The majority of the people are pagans and follow ancient customs. Fetishism is, therefore, the dominating religion amongst the population of Togoland. Adherents of the Christian religion, in many instances, still uphold the spirit of the Fetish influences. Polygamy is very prevalent. The individual will marry in church, but in the majority of instances insists upon having more than one wife. In these cases he is permitted to attend the church, but is barred from partaking of the Lord's Supper."

THE FLOODS OF PARIS.

WHILE the recent floods of Paris never reached the catastrophic level of January, 1910, they have caused considerable disorganisation in medical activities as in the general life of the city. In THE LANCET of Feb. 5th, 1910 (p. 390), we gave an account of the difficulties under which the hospital services and private medical practice had to be carried out, conditions which happily have not been repeated in the same degree of severity. As was the case 14 years ago, the first announcement of the effects of the inundation that has come to us through the Paris medical press was a short statement from the *Paris Médical* to the effect that their printing offices had been completely flooded. Consequently the first few issues of the *Paris Médical* for the present year will be delayed and the journal is meanwhile appearing in the form of a small supplement, printed elsewhere. We regret the misfortune which has befallen our contemporary, and trust that the damage it has sustained will be of a temporary nature only.

MEDICAL BOOKS AND JOURNALS FOR CENTRAL EUROPE.

A CORRESPONDENT has called our attention to the eager welcome which English medical books and journals receive in Hungary at the present time, where the poverty of the universities prevents the students from obtaining foreign technical works of any kind, although many of them speak and read English. France has already done something to make its literature accessible to the Hungarian people. We call attention again to the facilities for sending medical books and journals to Central Europe, afforded by the Universities' Library for Central Europe. This library works in coöperation with the Universities' Committee of the Imperial War Relief Fund and is now amalgamated with the literature department of the European Student Relief with headquarters at 16, Boulevard des Philosophes, Geneva, Switzerland, so that there is no duplication of effort. During the last year consignments of books have been sent to Austria, Czecho-Slovakia, Finland, Germany, Hungary, Poland, Roumania, and Russia, along with several sets of scientific journals including the *British Medical Journal*, *The Lancet*, *Nature*, and the *Journal of Pathology*. Free transport facilities are accorded to the Library by the Governments of Czecho-Slovakia, Finland, Germany, Poland, and Roumania, while consignments for Russia are transported free of charge by the Red Cross Society of Russia direct to Moscow, whence they are distributed by a representative of the European Student Relief. Medical books and journals may be sent to the Hon. Secretary of the Universities' Library at the London School of Economics, Houghton-street, W.C. 2, and earmarked for any particular destination.

We are also asked to state that the British Legation in Belgrade would be glad if any readers of *The Lancet*, who do not wish to keep their copies for binding and are willing to incur the postage, will send their copy, when read, to L'Association des Médecins Assistants des Hôpitaux, Hôpital Civil, Belgrade, Yugoslavia. Also that Prof. Richard Werner, director of the Samaritan House at Heidelberg (Inst. for Exper. Cancer Research, Voss-strasse 3), would gladly receive any recent books and pamphlets on the subject of cancer.

A TEST OF DEATH.

To the Editor of THE LANCET.

SIR,—Whether the popular belief that people have been accidentally buried alive is well-founded, one does not know: but the cynically disposed might accuse us of asking for it by our sanction of death certificates without a view of the body. Now that this reproach is happily to be removed, why not adopt some simple procedure to be certified as performed in every case of death, which, without harrowing the feelings of relatives, would establish scientifically the extinction of life?

The most perfect method could be determined by experts: but I find the following in the "Manuel Pratique de la Médication Hypodermique":—

℞ Fluorescine 1 gm.
Carbonate de Soude 1 gm.
Eau distillée q. s. pour 8 c.c.

For s. c. injection. In case of death there is no reaction. If death be only apparent, the integument turns green in a few minutes and the eyes intensely so.

Some increase in the fee would be amply repaid by the dissipation of all fear, groundless or otherwise, of one of the most horrible of possibilities.

I am, Sir, yours faithfully,
Jan. 13th, 1924. E. O'CONNOR.

*** The injection of fluorescin for this purpose is mentioned in many text-books. It is a qualitative test to determine whether circulation has ceased.—ED. L.

AVIATION AND DEFECTIVE SMELL.

AIRMEN have most of their senses and functions exhaustively examined already, but now comes Mr. A. L. M. Flamme, médecin aide-major de 1re classe[1], who thinks their sense of smell too should be investigated before they are admitted to training. There are smells which are danger signals to the pilot—e.g., burning petrol, showing risk of fire; petrol unchanged, which means a leak; burning oil, suggesting overheating of the cylinders and so engine failure; burning rubber, from failing insulation. All these connote serious risks, of which the sense of smell gives the first warning. Defective smell may imply trouble in the nerve centre, hysteria, previous injury to the head, rhinitis, or nasal obstruction, any one of which may diminish the pilot's efficiency. Defect however is not very common. Mr. Flamme examined the olfactory condition of 100 air craftsmen, and found only one who could not distinguish petrol, orange, or peppermint among the test solutions offered to him; this man failed to recognise that camphor in a 1–50,000 solution had any smell at all.

CANON MILLER.

A CORRESPONDENT asks us how the well-known General Hospital for South-East London came by its name, and the story happens to be interesting to ourselves. The original institution, which can be shown by actual records to have been in existence for 140 years, was called the Kent Dispensary, afterwards the "Royal" Kent Dispensary when it came under the patronage of Queen Victoria, the daughter of the Duke of Kent, but not until 100 years after its foundation was the dispensary turned into a hospital, when certain wards were erected. This addition to the dispensary formed a memorial to Canon Miller, the rector of Greenwich, who had started a Hospital Sunday Fund at Birmingham during his incumbency there. With Dr. James Wakley, then Editor of THE LANCET, Canon Miller became the joint founder of the Metropolitan Hospital Sunday Fund, and the first meeting to organise that Fund was held in the editorial room of THE LANCET with Canon Miller in the chair (see THE LANCET Centenary Number, Oct. 6th, 1923, p. 739).

[1] Arch. de Méd. Milit., vol. lxxix., No. 3, p. 475.